PROJECT MANUAL

FOR

AFRICATOWN WELCOME CENTER

1959 Bay Bride Road Cutoff
Mobile, Alabama 36610

Project # CL-036-21

September 30, 2024
Bid Set revB

MOTT MACDONALD

107 Saint Francis Street
Suite 2900
Mobile, AL 36602

City of Mobile
Architectural Engineering Department
205 Government Plaza
P.O. Box 1827
Mobile, Alabama 36633-1827



Africatown Welcome Center

For the City of Mobile
1959 Bay Bride Road Cutoff
Mobile, Alabama 36610

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SECTION 00100
INVITATION TO BID

You are invited to submit a sealed bid for construction of the following facility:

PROJECT NAME: Africatown Welcome Center
PROJECT LOCATION: 1959 BayBridge Road Cutoff, Mobile, Alabama 36610
PROJECT NUMBER: CL-036-21

1 BID DATE:

A. Sealed Bids will be received and clocked in until 2:15 PM local time, Wednesday, the 23rd day of October, 2024. Bidders shall insert sealed Bids into a receptacle, marked "City of Mobile Bids", located in the elevator lobby outside the office of the City Clerk Office, 9th Floor South Tower, Government Plaza, 205 Government Street, Mobile, Alabama 36602.

B. All Bids not clocked in at the City Clerk's Office prior to the time specified, or Bids received after the specified time, will be automatically rejected and returned immediately, unopened.

C. Bids will be publicly opened and read at 2:30 PM local time, in the Atrium Lobby of Government Plaza.

2 SPECIFICATIONS AND DRAWINGS:

A. Specifications and Drawings are on file and may be examined and obtained from the following location: https://www.cityofmobile.org/bids/

B. Contractor may contact Mott MacDonald or City of Mobile Project Manager for access to record drawings, if available.

C. Bidders shall use complete sets of Bid Documents in preparing their bid. Neither the Owner nor Architect/Engineer assumes responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bid Documents.

D. **Addenda will be issued via e-mail to all Pre-Bid Conference attendees.**

E. **This is a tax exempt project and shall be certified by the requirements of the Alabama Department of Revenue. Bidders shall NOT include sales and use taxes with their bid amounts. Bidders shall complete the Sales Tax Form C-3A and include it as an attachment to their Bid Form (see Section 00400).**

F. Product Substitutions must be pre-approved before the bid (see Section 01400 for requirements).

3 BID SURETY: Required on Bids $50,000.00 or more

A. A Cashier's Check drawn on a bank registered to do business in the State of Alabama and which is a member of the Federal Deposit Insurance Corporation, or a Bid Bond payable to Owner, City of Mobile, in the amount of 5% of the Base Bid, but in no event more than $10,000.00 is required to accompany Bid.

B. Bid Bond must be issued by a Surety licensed to do business in the State of Alabama. Bidder shall require the attorney in fact who executes the required bonds on behalf of the surety to affix to the bond a certified and current copy of the power of attorney.

C. No Bid may be modified, withdrawn, or canceled for a period of ninety (90) days after the time designated above for receipt of bids.

D. The City of Mobile will have ninety (90) days from the bid opening date to award contract.

4 SURETY QUALIFICATIONS:

A. A Surety authorized to do business in the State of Alabama must issue Bonds.

B. If the Base Bid is $50,000 or more, the Surety must have a minimum rating of A/Class VI as reported by the latest issue of Best Key Rating Guide Property-Casualty published by Alfred M. Best Company, Inc.

5 IRREGULARITIES AND REJECTION:

A. The City of Mobile reserves the right to waive irregularities in the Bid and in Bidding, and to reject any or all Bids.

6 BIDDER QUALIFICATIONS:

A. Bids for Work costing $50,000 or more must be licensed pursuant to current Alabama law and of classifications compliant with the State of Alabama Licensing Board for General Contractors. Note that if the contract amount is $10,000 or greater, both a Performance Bond and a Labor and Material Payment Bond shall be required. **Before Bidding, Contractor shall verify their license classification of their General Contractors license with the State of Alabama Licensing Board for General Contractors to verify classification is acceptable to perform 51% of the Scope of Work.**

B. In case of a joint venture of two or more Contractors, the amount for the bid shall be within the maximum bid limitations as set by the State of Alabama Licensing Board for General Contractors of at least one of the partners to the joint venture.

7 NON-RESIDENT CONTRACTORS:

A. Nonresident Bidders shall, prior to submitting a bid, be registered with the Alabama Secretary of State and the Alabama Department of Revenue. Provide the Secretary of State Business “Entity ID Number” on the Bid Form in the space provided.

8 PRE-BID CONFERENCE:

A. A Pre-Bid Conference shall be held on September 30, 2024, **at the project site, 1959 Bay Bridge Road Cutoff**, at 10:30 AM local time. The conference will include a walkthrough of the site location. A representative of the Bidder is encouraged to be present at the meeting. However, if no representative can be present in person, the Bidder shall contact the Project Architect, Andrew Marasca at 251-298-8476 at least 24 hours prior to the meeting, in order to coordinate attendance of the meeting by conference call. Bidders are encouraged to participate in the Pre-Bid Conference, visit

the site prior to submitting a Bid and include all costs associated with the project in their Bids.

B. Minutes of this conference will be made as an Addendum for the project.

9 BID SUBMITTAL:

A. Bids must be submitted on copies of the Bid Forms furnished in the bidding documents along with the General Contractor and Subcontractor's UEI number and proof of active SAM.gov registration.

B. Bid, with Bid Security, Sales Tax Form C-3A, City of Mobile Subcontracting and Major Supplier Plan and other supporting data specified, shall be contained in a sealed, opaque envelope, approximately 9x12 inches or larger and be marked on the outside with the words "**SEALED BID FOR AFRICATOWN WELCOME CENTER - PROJECT NUMBER: CL-036-21".**

C. The Bid envelope shall be clearly addressed to the Owner as indicated on the Bid Form and include the bid date, the name, address and State License number and classification of the Bidder issued by the State of Alabama Licensing Board for General Contractors.

D. All Bids of $50,000 or more must include the bidder's State of Alabama General Contractor's License information written on the outside of the bid envelope. Any bid submitted without such license information may be rejected and returned to the bidder unopened.

E. In addition, in large letters on both front and back of envelope, write the following: **DO NOT OPEN UNTIL TWO-THIRTY PM, October 23, 2024**.

F. For a bid to be valid it shall be delivered at designated location prior to time and date for receipt of Bids indicated in INVITATION TO BID, or prior to any extension thereof issued to Bidders. After that time no Bid will be received or withdrawn.

G. When sent by mail, preferably special delivery, express service, or registered mail, the sealed Bid, marked as indicated above, shall be enclosed in another envelope for mailing such that the exterior mailing container or envelope may be opened without revealing the contents of the Bid. It is the Contractors responsibility to assure delivery of the bid to the City Clerk's Office prior the time and date established.

10 EQUAL OPPORTUNITY:

A. The City of Mobile, Alabama is an Equal Opportunity Employer and requires that all Contractors comply with the Equal Employment Opportunity laws and the provisions of the Bid Documents in this regard.

B. The City of Mobile also encourages and supports the utilization of Minority Business Enterprises on these and all other publicly solicited Bids, and shall be in compliance with the City of Mobile's Minority Utilization Plan as adopted by the City Council.

C. Contractor shall provide an appropriately completed copy of the "City of Mobile Subcontracting and Major Supplier Plan" in the envelope with their Bid Form. Form shall document DBE Subcontractors participating in the project and, should the total % of DBE participation not meet the 15% minimum, all efforts to obtain DBE Subcontractors shall be documented on or attached to the DBE Form when submitted. During construction, contractors are required to submit a "DBE Utilization Report" with every Pay Application.

MINORITY BUSINESS ENTERPRISE AND WOMEN'S BUSINESS ENTERPRISE (MBE/WBE) REQUIREMENTS: Documentation of compliance with the MBE/WBE requirements is a matter of contractor responsibility. When subcontracting, the contractor must submit documentation of good faith efforts to meet the project's MBE/WBE requirements before contracted work can commence; MBE/WBE requirements and required documentation are outlined in ADCNR Required Attachments Section of the Contract Documents. Failure on the part of the contractor to submit proper documentation may cause the Owner to not execute or to terminate the contract.

D. Contractors should contact the City of Mobile, Supplier Diversity Manager for assistance with DBE Subcontractor information and any questions regarding the DBE Compliance Forms. Contact Archnique Kidd at 251-208-7967.

E. A Directory of DBE Vendors can be found at the following location: https://workwith.cityofmobile.org/

11 ADDITIONAL BIDDING PROCEDURES:

A. Refer to the complete information in the Bid Documents prior to submitting a bid. Additional Bidding Procedure information is contained therein, particularly in the specification Section 00200 "Instructions to Bidders - AIA Document A701" and in the specification Section 00300 "Supplementary Instructions to Bidders".

12 STATE OF ALABAMA IMMIGRATION ACT

"The State of Alabama, under the Beason-Hammon Alabama Taxpayer and Citizen Protection Act, Act No. 2011-535, Alabama Code Section 31-13-1, et. Seq., requires:

A. That the Contractor shall be enrolled in the E-Verify Program, shall participate in that Program during the performance of the contract, and shall verify the immigration status of every employee who is required to be verified, according to the applicable federal rules and regulations; and

B. That it will attach to the contract the company's documentation of enrollment in E-Verify.

C. The subcontractor must also enroll in the E-Verify Program prior to performing any work on the contract and shall attach to its sworn affidavit documentation establishing that the subcontractor is enrolled in the E-Verify Program.

13 PUBLIC CONTRACTS WITH ENTITIES ENGAGING IN CERTAIN BOYCOTT ACTIVITIES

A. By signing this contract, Contractor further represents and agrees that it is not currently engaged in, nor will it engage in, any boycott of a person or entity based in or doing business with a jurisdiction with which the State of Alabama can enjoy open trade.

14 FEDERAL CONDITIONS

A. Job site postings, including the Notice to All Employees working on Federal or Federally Financed Construction Projects and the EEO (Equal Employment Opportunity) poster, will be required to be maintained and shall be in a location accessible to all employees.

END OF SECTION 00100

SECTION 00200
INSTRUCTIONS TO BIDDERS

PART 1 GENERAL

A. This section includes the INSTRUCTIONS TO BIDDERS, AIA Document A701 to be utilized with the Owner's most recent modifications and which shall be used in conjunction with the entire Bid Documents and Section 00300 SUPPLEMENTARY INSTRUCTIONS TO BIDDERS for this project.

DRAFT

AIA® Document A701™ – 2018

Instructions to Bidders

for the following Project:
(Name, location, and detailed description)

« Africatown Welcome Center Phase II – Construction»
«1959 Bay Bridge Road CTF »
« Mobile, Alabama 36610 »
« CL-036-21 »

THE OWNER:
(Name, legal status, address, and other information)

«City of Mobile »« »
«Architectural Engineering Department »
«PO Box 1827 »
«Mobile, Alabama 36633-1827»

THE ARCHITECT:
(Name, legal status, address, and other information)

« Mott MacDonald Architects, Inc.»
« 107 St Francis St #2900 »
« Mobile, AL 36602 »

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ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

FEDERAL, STATE, AND LOCAL LAWS MAY IMPOSE REQUIREMENTS ON PUBLIC PROCUREMENT CONTRACTS. CONSULT LOCAL AUTHORITIES OR AN ATTORNEY TO VERIFY REQUIREMENTS APPLICABLE TO THIS PROCUREMENT BEFORE COMPLETING THIS FORM.

It is intended that AIA Document G612™–2017, Owner's Instructions to the Architect, Parts A and B will be completed prior to using this document.

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ARTICLE 1 DEFINITIONS

§ 1.1 Bidding Documents include the Bidding Requirements and the Proposed Contract Documents. The Bidding Requirements consist of the advertisement or invitation to bid, Instructions to Bidders, supplementary instructions to bidders, the bid form, and any other bidding forms. The Proposed Contract Documents consist of the unexecuted form of Agreement between the Owner and Contractor and that Agreement's Exhibits, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, all Addenda, and all other documents enumerated in Article 8 of these Instructions.

§ 1.2 Definitions set forth in the General Conditions of the Contract for Construction, or in other Proposed Contract Documents apply to the Bidding Documents.

§ 1.3 Addenda are written or graphic instruments issued by the Architect, which, by additions, deletions, clarifications, or corrections, modify or interpret the Bidding Documents.

§ 1.4 A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

§ 1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents, to which Work may be added or deleted by sums stated in Alternate Bids.

§ 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from, or that does not change, the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

§ 1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, as described in the Bidding Documents.

§ 1.8 A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents. A Bidder must be licensed by the State Licensing Board for General Contractors if the amount for the Contract exceeds the amount established by said Board.

§ 1.9 A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment, or labor for a portion of the Work. A Sub-bidder performing Work must be licensed by the State Licensing Board for General Contractors if the Sub-bidders' contract amount exceeds that established by said Board.

1.10 A non-resident Bidder or Sub-bidder is one who

a. Is neither organized nor existing under the laws of the State of Alabama
b. nor maintains its principal place of business in the State of Alabama.

A non-resident contractor who has maintained a permanent branch office within the State of Alabama for at least five (5) continuous years shall not thereafter be deemed to be a non-resident contractor so long as such contractor continues to maintain a branch office within Alabama.

ARTICLE 2 BIDDER'S REPRESENTATIONS

§ 2.1 By submitting a Bid, the Bidder represents that:

.1 the Bidder has read and understands the Bidding Documents;
.2 the Bidder understands how the Bidding Documents relate to other portions of the Project, if any, being bid concurrently or presently under construction;
.3 the Bid complies with the Bidding Documents;
.4 the Bidder has visited the site, become familiar with local conditions under which the Work is to be performed, and has correlated the Bidder's observations with the requirements of the Proposed Contract Documents;
.5 the Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception; and
.6 the Bidder has read and understands the provisions for liquidated damages, if any, set forth in the form of Agreement between the Owner and Contractor.

§ **2.2** The Bidder is licensed by the State Licensing Board for General Contractors and the amount Bid does not exceed the Bid Limit stipulated in the Bidder's License and by the City of Mobile.

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§ 2.3 Each and every Contractor belonging to or comprising a part of any entity that is bidding as a joint venture or association involving two or more contractors is licensed by the State Licensing Board for General Contractors and that the amount Bid does not exceed the Bid limit stipulated in at least one of their licenses.

§ 2.4 Any non-resident Bidder is authorized by the Secretary of State of Alabama and is registered with Alabama Department of Revenue to transact business in Alabama.

§ 2.5 Joint Ventures or Associations of Contractors, whether the same are Bidders or Subcontractors of Bidders, will remain in existence until all insurance and warranty requirements for the Project have been fulfilled.

ARTICLE 3 BIDDING DOCUMENTS

§ 3.1 Distribution

§ 3.1.1 Bidders shall obtain complete Bidding Documents, as indicated below, from the issuing office designated in the advertisement or invitation to bid, for the deposit sum, if any, stated therein.

§ 3.1.2 Any required deposit shall be refunded to Bidders who submit a bona fide Bid and return the paper Bidding Documents in good condition within ten days after receipt of Bids. The cost to replace missing or damaged paper documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the paper Bidding Documents, and the Bidder's deposit will be refunded.

§ 3.1.3 Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the advertisement or invitation to bid, or in supplementary instructions to bidders.

§ 3.1.4 Bidders shall use complete Bidding Documents in preparing Bids. Neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete Bidding Documents.

§ 3.1.5 The Bidding Documents will be available for the sole purpose of obtaining Bids on the Work. No license or grant of use is conferred by distribution of the Bidding Documents.

§ 3.2 Modification or Interpretation of Bidding Documents

§ 3.2.1 The Bidder shall carefully study the Bidding Documents, shall examine the site and local conditions, and shall notify the Architect of errors, inconsistencies, or ambiguities discovered and request clarification or interpretation pursuant to Section 3.2.2.

§ 3.2.2 Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder in writing and shall be received by the Architect at least five (5) calendar days prior to the date for receipt of Bids.

§ 3.2.3 Modifications and interpretations of the Bidding Documents shall be made by Addendum. Modifications and interpretations of the Bidding Documents made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 3.2.4 The Contract Drawings and Specifications are intended to cooperate and agree, but should conflicts or difference be found to exist between the requirements within either and clarification has not been obtained in accordance with the above procedure prior to Bidding, then the most costly and/or restrictive interpretation by the decision of the Architectural Engineering Department Director will be final.

§ 3.3 Substitutions

§ 3.3.1 The materials, products, and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitution.

§ 3.3.2 Substitution Process

§ 3.3.2.1 Written requests for substitutions shall be received by the Architect at least fifteen (15) calendar days prior to the date for receipt of Bids. Requests shall be submitted in the same manner as that established for submitting clarifications and interpretations in Section 3.2.2.

§ 3.3.2.2 Bidders shall submit substitution requests on a Substitution Request Form if one is provided in the Bidding Documents.

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§ 3.3.2.3 If a Substitution Request Form is not provided, requests shall include (1) the name of the material or equipment specified in the Bidding Documents; (2) the reason for the requested substitution; (3) a complete description of the proposed substitution including the name of the material or equipment proposed as the substitute, performance and test data, and relevant drawings; and (4) any other information necessary for an evaluation. The request shall include a statement setting forth changes in other materials, equipment, or other portions of the Work, including changes in the work of other contracts or the impact on any Project Certifications (such as LEED), that will result from incorporation of the proposed substitution.

§ 3.3.3 The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

§ 3.3.4 If the Architect approves a proposed substitution prior to receipt of Bids, such approval shall be set forth in an Addendum. Approvals made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 3.3.5 No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

§ 3.3.6 See Division One Section "Substitution Procedures", if included in Specification.

§ 3.4 Addenda

§ 3.4.1 Addenda will be transmitted to Bidders known by the issuing office to have received complete Bidding Documents.

§ 3.4.2 Addenda will be available where Bidding Documents are on file.

§ 3.4.3 Addenda will be issued no later than two (2) days prior to the date for receipt of Bids, except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

§ 3.4.4 Prior to submitting a Bid, each Bidder shall ascertain that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

ARTICLE 4 BIDDING PROCEDURES

§ 4.1 Preparation of Bids

§ 4.1.1 Bids shall be submitted on the forms included with or identified in the Bidding Documents. No bid will be considered unless made out and submitted on a copy of the Bid Form, Section 00410. Additional Bid Forms will be furnished to prospective Bidders upon request.

§ 4.1.2 All blanks on the bid form shall be legibly executed. Paper bid forms shall be executed in a non-erasable medium.

§ 4.1.3 Sums shall be expressed in both words and numbers, unless noted otherwise on the bid form. In case of discrepancy, the amount entered in words shall govern.

§ 4.1.4 Edits to entries made on paper bid forms must be initialed by the signer of the Bid.

§ 4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change" or as required by the bid form.

Unit Prices: Supply requested Unit Prices where shown on the Bid Form, Such Unit Prices shall be used to adjust the Contract Amount where the quantities shown on the Drawings and/or Specifications do not reflect amounts required for completion of the work. Where Completion of the Work requires quantities in excess of those shown on the drawings and specifications, unit prices shall be used to compute an extra payment to the Contractor. Where completion of work required quantities less than those on the Drawings and/or specifications, unit prices shall be used to compute a credit to the Owner.

Contingency Allowance: As shown on the Bid Form, Contractor shall add the amount of the contingency allowance to the Base Bid to derive the Total Bid. The contingency allowance shall cover cost of material, labor, overhead, profit

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and other expenses for complete installation of items of additional work as required for a complete functional project. The contingency allowance shall be used to fund unforeseen conditions not covered in the construction documents and shall be subject to the provisions of change orders. Upson the completion of work any unused portion of the contingency allowance shall be credited to the Owner by change order.

§ 4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder's refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall neither make additional stipulations on the bid form nor qualify the Bid in any other manner.

§ 4.1.7 Each copy of the Bid shall state the legal name and legal status of the Bidder. As part of the documentation submitted with the Bid, the Bidder shall provide evidence of its legal authority to perform the Work in the jurisdiction where the Project is located. Each copy of the Bid shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further name the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached, certifying the agent's authority to bind the Bidder.

§ 4.1.8 A Bidder shall incur all costs associated with the preparation of its Bid.

§ 4.2 Bid Security

§ 4.2.1 Each Bid shall be accompanied by the following bid security if so required in the Bidding Documents:
(Insert the form and amount of bid security.)

«The Bidder shall provide a Bid Security in the form of a cashier's check drawn on a bank registered to do business in the State of Alabama and which is a member of the Federal Deposit Insurance Corporation, or a Bid Bond. Bid Security is required for bids exceeding $10,000.00. Bid Security shall be in the amount of 5% of the TOTAL BID, but in no event more than $10,000.00.»

§ 4.2.2 The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and shall, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty.

§ 4.2.3 If a surety bond is required as bid security, it shall be written on AIA Document A310™, Bid Bond, unless otherwise provided in the Bidding Documents. The attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of an acceptable power of attorney. The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 4.2.4 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until (a) the Contract has been executed and bonds, if required, have been furnished; (b) the specified time has elapsed so that Bids may be withdrawn; or (c) all Bids have been rejected.

§ 4.2.5 Bonds must be issued by a Surety authorized to do business in the State of Alabama. A Performance Bond and a Labor and Material Payment Bond are required for projects exceeding $10,000.00. If the project cost is $50,000.00 or more, the Surety must have a minimum rating of A/Class VI as reported by the latest issue of Best's Key Rating Guide Property-Casualty published by Alfred M. Best Company, Inc.

§ 4.3 Submission of Bids

§ 4.3.1 A Bidder shall submit its Bid as indicated below:
(Indicate how, such as by website, host site/platform, paper copy, or other method Bidders shall submit their Bid.)

«Submission of Bid shall be as stated in Section 00100, Invitation to Bid, Paragraph 9, titled "Bid Submittal".»

§ 4.3.3 Bids shall be submitted by the date and time and at the place indicated in the invitation to bid. Bids submitted after the date and time for receipt of Bids, or at an incorrect place, will not be accepted and will be returned unopened.

§ 4.3.4 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

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§ 4.3.5 A Bid submitted by any method other than as provided in this Section 4.3 will not be accepted.

§ 4.4 Modification or Withdrawal of Bid

§ 4.4.1 Prior to the date and time designated for receipt of Bids, a Bidder may submit a new Bid to replace a Bid previously submitted, or withdraw its Bid entirely, by notice to the party designated to receive the Bids. Such notice shall be received and duly recorded by the receiving party on or before the date and time set for receipt of Bids. The receiving party shall verify that replaced or withdrawn Bids are removed from the other submitted Bids and not considered. Notice of submission of a replacement Bid or withdrawal of a Bid shall be worded so as not to reveal the amount of the original Bid.

§ 4.4.2 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids in the same format as that established in Section 4.3, provided they fully conform with these Instructions to Bidders. Bid security, if required, shall be in an amount sufficient for the Bid as resubmitted.

ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 Opening of Bids

If stipulated in an advertisement or invitation to bid, or when otherwise required by law, Bids properly identified and received within the specified time limits will be publicly opened and read aloud. A summary of the Bids may be made available to Bidders.

§ 5.2 Rejection of Bids

Unless otherwise prohibited by law, the Owner shall have the right to reject any or all Bids.

§ 5.3 Acceptance of Bid (Award)

§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest responsive and responsible Bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. Unless otherwise prohibited by law, the Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's best interests.

§ 5.3.2 The Owner shall accept Alternates in the order listed on the Bid Form to determine the lowest responsive and responsible Bidder on the basis of the sum of the Base Bid and Alternates accepted.

ARTICLE 6 POST-BID INFORMATION

§ 6.1 Contractor's Qualification Statement

Bidders to whom award of a Contract is under consideration shall submit to the Architect, upon request and within the timeframe specified by the Architect, a properly executed AIA Document A305™, Contractor's Qualification Statement, unless such a Statement has been previously required and submitted for this Bid.

§ 6.3 Submittals

§ 6.3.1 After notification of selection for the award of the Contract, the Bidder shall, within three (3) calendar days or as stipulated in the Bidding Documents, submit in writing to the Owner through the Architect:

.1 a designation of the Work to be performed with the Bidder's own forces;

.2 names of the principal products and systems proposed for the Work and the manufacturers and suppliers of each; and

.3 names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

.4 The name of the Project Superintendent and Project Manager together with the resume of qualifications of each;

.5 Nonresident Contractor shall submit a letter from an attorney as required by Subparagraph 11.1.2 below and;

.6 Engineering Firm or Testing Laboratory for testing as specified.

§ 6.3.2 The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.

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§ 6.3.3 Prior to the execution of the Contract, the Architect will notify the Bidder if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, withdraw the Bid or submit an acceptable substitute person or entity. The Bidder may also submit any required adjustment in the Base Bid or Alternate Bid to account for the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited.

§ 6.3.4 Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

§ 6.3.5 The Contractor shall, within ten (10) calendar days of receiving Contract Forms for signature, furnish to the Owner the following items, along with the signed contract, or the Bid Security will be forfeited automatically without further delay:

.1 A Signed Construction Contract;
.2 Performance Bond and Labor and Material Payment Bond (originals) on all Bids over $10,000.00;
.3 Certificate of Insurance and copy of Builder's Risk Policy (original), as identified in the specifications;
.4 Schedule of Values; and
.5 Federal Immigration Law Compliance: E-Verify enrollment documentation.

§ 6.3.6 The Bid Check or Bond of the three (3) lowest Bidders will not be returned until after the Construction Contract is executed.

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

§ 7.1 Bond Requirements

§ 7.1.1 If stipulated in the Bidding Documents, the Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder.

§ 7.1.2 If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid. If the furnishing of such bonds is required after receipt of bids and before execution of the Contract, the cost of such bonds shall be added to the Bid in determining the Contract Sum.

§ 7.1.3 The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 7.1.4 Unless otherwise indicated below, the Penal Sum of the Payment and Performance Bonds shall be the amount of the Contract Sum.

§ 7.1.5 A Surety authorized to do business in the State of Alabama shall issue Performance Bond and Labor and Material Payment Bond, as required by the Contract Documents. If the project cost is $50,000.00 or more, the Surety must have a minimum rating of A/Class VI as reported by the latest issue of Best's Key Rating Guide Property-Casualty, published by Alfred M. Best Company, Inc.

§ 7.2 Time of Delivery and Form of Bonds

§ 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than ten (10) calendar days from receiving the Construction Contract forms for signature.

§ 7.2.2 The bonds shall be written on City's Performance Bond and Labor and Material Payment Bond forms.

§ 7.2.3 The bonds shall be dated on or after the date of the Contract.

§ 7.2.4 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix to the bond a certified and current copy of the power of attorney.

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ARTICLE 8 FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

Unless otherwise required in the Bidding Documents, the Agreement for the Work will be written on AIA Document A101, Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment Is a Stipulated Sum.

§ 8.1.1 AIA Document A101, Standard Form of Agreement Between Owner and Contractor where the Basis of Payment is a stipulated sum will be edited electronically and include the standard signatures as required by the City of Mobile.

ARTICLE 9 NONDISCRIMINATION

§ 9.1.1 Contractor shall comply with all Federal, State and local laws concerning nondiscrimination, including but not limited to City of Mobile Ordinance No. 14-034 which requires, *inter alia*, that all contractors performing work for the City of Mobile not discriminate on the basis of race, creed, color, national origin or disability, require that all subcontractors they engage do the same, and make every reasonable effort to assure that fifteen percent of the work performed under contract be awarded to socially and economically disadvantaged individuals and business entities. Contractor shall provide a completed copy of the City of Mobile Subcontracting and Major Supplier Plan with the Bid Form, for bids of $250,000.00 or greater.

§ 9.1.2 Contractor shall comply the Equal Opportunity Clause as outlined in the Required Attachments for RESTORE Direct Component (Bucket 1) Construction Contracts, including Title 41 of the Code of Federal Regulations (CFR) Articles 60-1.4 Equal Opportunity Clause; 60-4.2 Solicitations; and 60.4.3 Equal Opportunity Clause.

ARTICLE 10 USE OF DOMESTIC PRODUCTS

§ 10.1.1 Section 39-3-1 Code of Alabama provides that the Contractor agrees, in the execution of this contract, to use material supplies and products manufactured, mined, processed or otherwise produced in the United States or its territories, if available at reasonable prices, and that breach of this agreement by the Contractor shall result in the assessment of liquidated damages in an amount not less than $500 nor more than 20 percent of the gross amount of the contract price.

§ 10.1.2 Section 39-3-4, Code of Alabama provides that the Contractor for a municipal construction project, financed by the State of Alabama or any political subdivision thereof, is required to use steel produced within the United States. If the Contractor violates the requirement to use domestic steel, this contract will automatically be revoked and the contractor shall not be entitled to any set-off or recoupment for labor or materials used up to the time of revocation.

§ 10.1.3 Section 200.322, 2 Code of Federal Regulations

§ 10.1.3.1 As appropriate and to the extent consistent with law, the non-Federal entity should, to the greatest extent practicable under a Federal award, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for work or products under this award.

§ 10.1.3.2 For purposes of this section:

§ 10.1.3.2.1 "Produced in the United States" means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

§ 10.1.3.2.2 "Manufactured products" means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

§ 10.1.3.3 Federal agencies providing Federal financial assistance for infrastructure projects must implement the Buy America preferences set forth in 2 CFR part 184.

ARTICLE 11 NON-RESIDENT CONTRACTORS

§ 11.1.1 An activity may be funded in whole or in part if the applicable requirements of subparts C and D of this part are met. When awarding contracts to carry out an activity under the Direct Component, a Gulf Coast State, coastal political subdivision, or coastal zone parish may give preference to individuals and companies that reside in, are headquartered in, or are principally engaged in business in the state of project execution consistent with Federal laws and policies on grants. A Gulf Coast State, coastal political subdivision, or coastal zone parish may propose to issue subawards for eligible activities. Recipients that propose to issue subawards must demonstrate their ability to conduct subrecipient monitoring and management, as required by Federal laws and policies on grants.

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§ 11.1.2 A successful nonresident bidder shall include in his post bid submittals a written opinion of an attorney at law licensed to practice law in such nonresident bidders' state of domicile, as to the preferences, if any or none, granted by the law of that state to its own business entities whose principal places of business are in that state in the letting of any or all public contracts.

§ 11.1.3 Nonresident Bidders shall, prior to submitting a bid, be registered with the Alabama Secretary of State and the Alabama Department of Revenue. Provide the Secretary of State Business "Entity ID Number" on the Bid Form in the space provided.

ARTICLE 12 PRE-BID REQUIREMENTS

§ 12.1 STATE OF ALABAMA CONTRACTORS LICENSE

§ 12.1.1 If the Project total bid amount is $50,000 or more, a license issued by the State of Alabama Licensing Board for General Contractors is required prior to submitting a bid and the licensed classification and bid limits must cover the type of work in this project. See Invitation to Bid, Section 6 "Bidder Qualifications".

§ 12.2 A NONRESIDENT BIDDER

§ 12.2.1 Every bidder shall be registered with the Department of Revenue and with the Alabama Secretary of the State prior to bidding. The Secretary of State's "Business Entity ID" registration number shall be included on the bid form.

ARTICLE 13 POST-BID REQUIREMENTS

§ 13.1 CITY CONTRACTOR'S LICENSE

13.1.1 A City of Mobile Contractors License is required and must be current before the Contractor signs the Contract. Contractor must qualify and post $10,000.00 Surety Bond with the Land Use/Code Administration Department before a Contractors License will be issued by the Revenue Department. Information on the City Contractors License may be obtained by writing or calling:

Land Use/Code Administration
P. O. Box 1827
Mobile, Alabama 36633-1827
Phone: 251.208.7421

Revenue Department
P. O. Box 1827
Mobile, Alabama 36633-1827
251.208.7461

13.2 E-VERIFY DOCUMENTATION

§ 13.2.1 The Contractor agrees that it shall comply with all of the requirements of the State of Alabama Immigration Law (Act. No. 2011-535 as amended by Act. No. 2012-491, Alabama Code (1975) Section 31-13-1, et. Seq., See Section 31-13-9), and the provisions of said Law, including all penalties for violation thereof, are incorporated therein.

13.3 PUBLIC CONTRACTS WITH ENTITIES ENGAGING IN CERTAIN BOYCOTT ACTIVITIES

§ 13.3 The Contractor represents and agrees that it is not currently engaged in, nor will engage in, any boycott of a person or entity based in or doing business with a jurisdiction with which the State of Alabama can enjoy open trade.

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SECTION 00300

SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

THE ATTENTION OF ALL BIDDERS IS CALLED TO THE FOLLOWING INSTRUCTIONS AND CONDITIONS:

I. BIDDING DOCUMENTS:

A. Bidders may obtain complete sets of Bid Documents and Specifications (Project Manual) from the Department of Architectural Engineering as listed in the Invitation to Bid.

B. Bidders shall use the complete set of documents in preparing their bid. Neither the City of Mobile nor the Engineer (Architect) assume responsibility for errors or misinterpretations resulting from use of an incomplete set of documents.

2. INTERPRETATION OF BID DOCUMENTS:

A. Bidders shall carefully study and compare the Bidding Documents and compare various components of the Bidding Documents with each other, shall examine the site and local conditions and shall at once report to the Project Manager any errors, inconsistencies or ambiguities discovered.

B. Bidders requiring clarification or interpretation of the Bidding Documents shall make a written request to the Project Manager by 3:00 PM at least five (5) calendar days prior to the date for receipt of Bids. E-mail requests are required and should be addressed to andrew.marasca@mottmac.com with a copy to roger.washington@cityofmobile.org. Interpretations, corrections and changes to the Bidding Documents will be made by a formal, written Addendum. Interpretations, corrections and changes to the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely on them.

C. Any discrepancy not resolved prior to Bidding shall be bid by the Contractor to provide for the most costly and/or restrictive interpretation of the documents.

3. BIDDING PROCEDURES:

A. No Bid will be considered unless made out and submitted on a copy of the Bid Form as set forth by the Bid Documents.

B. All blanks on the Bid Form shall be legibly executed in a non-erasable medium.

C. Sums shall be expressed in both words and figures. In case of discrepancy, the amount written in words shall govern.

D. Interlineations, alterations and erasures must be initialed by the signer of the Bid.

E. All requested Alternates, Unit Prices and Allowances shall be bid as indicated on the Bid Form and the Bid Documents.

F. Addenda shall be considered as a part of the Bid Documents and those issued prior to the opening of Bids shall be acknowledged on the Bid Form and any adjustment in cost shall be included in the Contract Sum.

G. Bidders are required to provide a UEI and proof of active SAM.gov registration. All subcontractors are required to have a UEI and active SAM.gov registration at the time work begins.

4. BID SECURITY:

A. A Cashier's Check drawn on a bank registered to do business in the State of Alabama and which is a member of the Federal Deposit Insurance Corporation, or Bid Bond payable to Owner, City of Mobile, in the amount of 5% of the Base Bid, but in no event more than $10,000.00, must accompany bid. By submitting a Bid Security, the Bidder pledges to enter into a Contract with the City of Mobile on the terms stated in the Bid, and will, if required, furnish bonds covering faithful performance of the Contract and required insurance certificate. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds or insurance or any other required document, the amount of the Bid security shall be forfeited to the Owner as liquidated damages, not as a penalty.

B. Bid Bond shall be valid for a minimum of ninety (90) days from the date of the Bid. The Owner reserves the right to retain the security of all Bidders until the successful Bidder enters into the Contract or until (90) days after Bid opening, whichever is sooner.

C. Bonds must be issued by a Surety licensed to do business in the State of Alabama. If the project cost is more than $50,000.00 the Surety must have a minimum rating of A/Class VI as reported by the latest issue of Best's Key Rating Guide Property-Casualty published by Alfred M. Best Company, Inc.

D. Power of Attorney is required for all Bonds.

E. The Surety company shall be required to execute AIA Document G-707, "Consent of Surety to Final Payment" prior to Final Payment of retainage being made to the Contractor.

5. EXAMINATION OF DOCUMENTS AND SITE WORK:

A. Before submitting a Bid, Bidders should carefully examine the Bid Documents, visit the site of the Work, including attendance at the Pre-Bid conference, fully inform themselves as to existing conditions and limitations, and include in the Bid a sum to cover the cost of all items included in the Contract and necessary to perform the Work. The submission of a Bid will be considered as conclusive evidence that the Bidder has made such examination.

6. SUBMISSION OF BIDS:

A. Bid, with Bid Security, Sales Tax Form C-3A, City of Mobile Subcontracting & Major Supplier Plan and other supporting data specified, shall be contained in a sealed, opaque envelope, approximately 9 x 12 inches or larger and be marked on the outside with the words "SEALED BID FOR AFRICATOWN WELCOME CENTER- PROJECT CL-036-21", the Bid Date, and Contractor's name, address, and City of Mobile Business License number. And, if bidding in an

amount $50,000 or greater, the State of Alabama General Contractor's License number and classification of the Bidder issued by the State of Alabama Licensing Board for General Contractors shall be written on the envelope.

B. Bids shall be deposited at the designated location prior to the time and date for receipt of Bids. Bids received after the time and date specified in the Invitation to Bid, or as modified by Addendum, will not be considered. Late Bids will be returned to the Bidder unopened.

C. The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

D. Oral, telephonic, facsimile or other electronically transmitted bids will not be considered.

7. MODIFICATION OR WITHDRAWAL OF BIDS:

A. A Bid may not be modified, withdrawn, or canceled by the Bidder for a period of ninety (90) days following the time and date designated for receipt of bids, and each Bidder so agrees in submitting a Bid.

8. CONSIDERATION AND AWARD OF BIDS:

A. At the discretion of the City, the properly identified Bids received on time will be publicly opened and will be read aloud.

B. The City shall have the right to reject any and all Bids. A Bid not accompanied by a required Bid security or a Bid which is in any way incomplete or irregular is subject to rejection.

C. It is the intent of the City to award a Contract to the lowest qualified Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. The City shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the City's judgment, is in the City's best interest.

D. The award shall be based on the lowest Total Bid for the Base Bid and any allowances, plus any alternates and/or options that may be accepted, as listed on the Bid Form.

9. PROOF OF COMPETENCY OF BIDDER:

A. Bidders may be required to furnish evidence satisfactory to the City of Mobile that they have sufficient means and experience in the types of work called for to assure the completion of the Contract in a satisfactory manner.

10. SIGNING OF CONTRACT:

A. The Standard Agreement between the City of Mobile and the Contractor, included herein, shall serve as the Agreement between the City and the Contractor.

B. The Bidder to whom the Contract is awarded shall, within ten (10) calendar days of receiving the Contract Forms, properly execute and deliver to the Owner, the following items with the signed Agreement:
   (1). Performance Bond and Labor and Material Payment Bond (originals);
   (2). Certificate of Insurance (original) with endorsements to City of Mobile;
   (3). Evidence of enrollment in the E-Verify program.
   (4). Other documentation as required by the Contract Documents.

C. Failure or refusal to sign the Agreement or to provide Certificates of Insurance in a form satisfactory to the City of Mobile, E-Verify verification, or other required documentation, shall subject the Bidder to immediate forfeiture of Bid Security.

D. On all documents: City of Mobile Business License, the Alabama Secretary of State Business Identity, the Alabama Secretary of State Certificate of Authority (out of state contractors), E-verify documentation, and ACORD Insurance Form, the Contractor's name shall be EXACTLY the same.

11. NONDISCRIMINATION:

A. Contractor shall comply with all Federal, State and local laws concerning nondiscrimination, including but not limited to City of Mobile Ordinance No. 14-034 which requires, inter alia, that all contractors performing work for the City of Mobile not discriminate on the basis of race, creed, color, national origin or disability, require that all subcontractors they engage do the same, and make every reasonable effort to assure that fifteen percent of the work performed under contract be awarded to socially and economically disadvantaged individuals and business entities.

B. Contractor shall comply the Equal Opportunity Clause as outlined in the Required Attachments for RESTORE Direct Component (Bucket 1) Construction Contracts, including Title 41 of the Code of Federal Regulations (CFR) Articles 60-1.4 Equal Opportunity Clause; 60-4.2 Solicitations; and 60.4.3 Equal Opportunity Clause.

12. AMERICANS WITH DISABILITIES ACT (ADA):

A. Bidders shall comply with the provisions of the Americans with Disabilities Act (ADA) of 1990 which prohibits discrimination against individuals with disabilities.

13. USE OF DOMESTIC PRODUCTS:

A. Section 39-3-1, Alabama Code, 1975, provides that the Contractor agree, in the execution of this Contract, to use materials, supplies and products manufactured, mined, processed or otherwise produced in the United States or its territories, if available at reasonable prices, and that breach of this Agreement by the Contractor shall result in the assessment of liquidated damages in an amount not less than $500.00 nor more than twenty (20) percent of gross amount of the Contract Price.

B. Section 200.322, 2 Code of Federal Regulations: Contractor shall comply with all federal regulations regarding products produced and/or manufactured in or outside the United States.

14 NON-RESIDENT CONTRACTORS

A. Refer to section 34.305, Title 31 of the Code of Federal Regulations for requirements for non-resident contractors.
B. A successful nonresident bidder shall include in his post bid submittals a written opinion of an attorney at law licensed to practice law in such nonresident bidders' state of domicile, as to the preferences, if any or none, granted by the law of that state to its own business entities whose principal places of business are in that state in the letting of any or all public contracts.
C. Nonresident Bidders shall, prior to submitting a bid, be registered with the Alabama Secretary of State and the Alabama Department of Revenue. Provide the Secretary of State Business "Entity ID Number" on the Bid Form in the space provided.

15. ALABAMA IMMIGRATION ACT:

A. The State of Alabama Immigration Law (Act No. 2011-535 as amended by Act No. 2012-491), requires that Contractors not violate federal immigration law or knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama. In addition, Contractors are required to enroll in the federal E-Verify program and submit verification of enrollment to the City of Mobile within ten (10) days of receiving the contract forms (see Section 00600).

16. CITY OF MOBILE BUSINESS LICENSE:

A. A City of Mobile Business License is required and must be current at time of contract award and throughout contract period.

17. CITY OF MOBILE CONTRACTOR'S BUSINESS LICENSE:

A. A City of Mobile Contractor's Business License is required and must be current when contractor signs the contract and throughout contract period.

B. Contractor must qualify and post a $10,000 surety bond with the Land Use/Code Administration Department before a Contractor's Business License will be issued by the Revenue Department. Information on the City Contractor's License may be obtained by writing or calling:

Land Use/Code Administration
P.O. Box 1827
Mobile, Alabama 36633-1827
Phone: 251-208-7421

Revenue Department
P.O. Box 1827
Mobile, Alabama 36633-1827
Phone: 251-208-7461

18. CITY OF MOBILE BUILDING PERMIT:

A. A City of Mobile Building Permit is required and shall be obtained from the Land Use/Code Administration Department, but at no cost to the Contractor.

B. Contractor is responsible for ensuring that all inspections are successfully performed in accordance with City of Mobile regulations.

19. CONSTRUCTION SCHEDULE AND ACCESS:

A. The project shall be completed within three hundred sixty-five (365) calendar days from the date indicated by the Notice to Proceed.

B. Contractor shall have access to the various buildings as follows: AFRICATOWN WELCOME CENTER: 7 Days a week, 7AM-6PM

C. The Contractor may be allowed additional construction days due to inclement conditions ("rain days") only as such are appropriately documented and are in excess of the NOAA/National Weather Service average (previous 5 years) for the given month. A "rain day" is defined as more than a "trace" (0.10") of rain falling within a given 24 hour period. The Contractor shall provide documentation and formally request any "rain days" they feel are legitimately due. Documentation shall be submitted to the Project Manager, in writing, within ten (10) calendar days of the rain event. Claim shall include documentation of trades adversely impacted and the impacted activities of each trade.

20. SITE CONSIDERATIONS:

A. It is the Contractor's responsibility to carefully remove and store any items not permanently installed within the work areas. We strongly recommend that the Contractor photograph, videotape or in some manner document any features to be removed and their condition, prior to removal.

B. Noise and strong smells shall be isolated or kept to a minimum when adjacent portions of the site are occupied.

C. Contractor shall be responsible to leave the work area and adjacent site clear of equipment and debris, etc. at the end of each work day. All final cleaning is the responsibility of the Contractor and shall be executed prior to acceptance for reuse of any portion of the site.

D. A dumpster and lay down area for Contractor materials and staging may be located at the site and located per the direction of the Owner. The Contractor is responsible for the removal of the dumpster, any storage containers and any security fencing, temporary erosion control (BMPs), etc. as soon as practical after their use by the Contractor or the work is complete.

21. SALES AND USE TAX EXEMPTION:

A. As per the State of Alabama ACT 2013-205, the Alabama Department of Revenue (ADOR) has been granted the authority to issue a "Certificate of Exemption from Sales and Use Tax for Governmental Entities" on construction projects. Therefore, this project shall qualify for State of Alabama Sales and Use Tax Exemptions under

this ACT. It is the responsibility of the Bidder to confirm the potential tax exempt status of their bid with the ADOR and include any such savings in their bid, as well as accounting for same on their bid form attachment Sales Tax Form C-3A.

B. The full text of ACT 2013-205 is available on the State of Alabama Building Commission web-site at www.bc.alabama.gov .

22. SUBMISSION OF LIEN WAIVERS AND DBE COMPLIANCE, UTILIZATION REPORTS:

A. At each monthly Application for Payment submitted to the owner and ADCNR, the Contractor shall provide completed the Subcontractor Listing reportings on the ADCNR issued forms and lien waivers, including those from Subcontractors and material suppliers.

23. NOTICE OF COMPLETION:

A. For Contracts $50,000 or greater:
Contractor shall provide proof of publication of Advertisement of Completion for four consecutive weeks in a local newspaper, as required in the Title 39, Section 39-1-1, Subsection (f), of the Code of Alabama. This Advertisement shall not begin until the Project has been accepted by the City of Mobile.

B. Notice of Completion advertisement shall read as follows:

STATE OF ALABAMA

COUNTY OF MOBILE

NOTICE OF COMPLETION

In accordance with Chapter 1, Title 39, Code of Alabama, 1975, **NOTICE IS HEREBY given that (COMPANY NAME) has completed the contract for City of Mobile, AFRICATOWN WELCOME CENTER CL-036-21,** Mobile, Alabama 36610. All persons having any claims for labor, material or otherwise in connection with this project should immediately notify the Architectural Engineering Department, City of Mobile, P.O. Box 1827, Mobile, Alabama 36633-1827.

C. Advertisement shall not begin until the Project has been accepted by the City of Mobile as Substantially Complete.

24. CONTRACTOR WARRANTY AND CERTIFICATION:

A. Upon completion of the contract, the Contractor shall certify under oath that all bills have been paid in full.

B. Contractor shall provide a one year Labor and Materials Warranty on company letterhead in addition to other warranties required by the Bid Documents.

25. LIQUIDATED DAMAGES

A. A time charge equal to Two Hundred Fifty Dollars ($250.00) per calendar day will be made against the Contractor for the entire period that any part of the Work remains uncompleted, or any required closeout documents are not acceptably submitted, for more than thirty (30) calendar days after the time specified for the Substantial Completion for the Work, the amount of which shall be deducted by the owner, and shall be retained by the Owner out of monies otherwise due the Contractor in the final payment, not as a penalty, but as liquidated damages sustained.

26. ADDITIONAL TERMS AND CONDITIONS FOR AWARD:

A. Any contract awarded under this Invitation for Bids may be paid for in whole or in part with grant funding from the United States Department of Treasury ("Treasury") and the Alabama Department of Conservation and Natural Resources ("ADCNR") under the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act of 2012 (RESTORE Act). Any contract resulting from this solicitation will be subject to the terms and conditions of the following award, the RESTORE Act Financial Assitance Standard Terms and Conditions and Program Specific Terms and Conditions, the Standard Sub-Award Terms and Conditions, the RESTORE Act, 33 U. S. C. 1321(t), Treasury Regulations 31 C. F. R. Part 200 (included Appendix II to Part 200), and all other OMB circulars, executive orders or other federal laws or regulation, as applicable. Notwithstanding the above, neither ADCNR nor Treasury, or any of their agents, representatives, or employees, is or will be a party to this Invitation for Bids or any resulting contract. Further, any contractor awarded a contract under this Invitation for Bids shall not be deemed to be an agent, representative, employee or servant of ADCNR or Treasury.

END OF SECTION

SECTION 00400

BID FORM

Copies of the following Bid Forms shall be used. Bids submitted on alternate forms may be rejected. Fill in all blank spaces with an appropriate entry. Bid Form must be signed by an officer of the company and notarized.

TO: City of Mobile, 205 Government St., P.O. Box 1827, Mobile, AL, 36633

REF: PROJECT NO.: CL-036-21
PROJECT NAME: Africatown Welcome Center
PROJECT LOCATION: 1959 Bay Bridge Road Cutoff
Mobile, Alabama, 36610

In compliance with the Bid Documents and having carefully and thoroughly examined said documents for the subject Work prepared by the City of Mobile, Architectural Engineering Department and Mott MacDonald dated December 20, 2023; and all Addendum (a) Number(s) _____, dated _____, 2024 (CAUTION: before submitting any bid it is the Bidder's responsibility to check with the Architectural Engineering Department for all Addenda or special instructions that may impact the Bid) thereto, receipt of which is hereby acknowledged, the premises and all conditions affecting the Work prior to making this Proposal, the Undersigned Bidder, hereby

COMPANY NAME:_____

ADDRESS:_____PHONE_____

ALABAMA GENERAL CONTRACTOR LICENSE NO. _____

CITY OF MOBILE BUSINESS LICENSE NO._____

SECRETARY OF STATE OF ALABAMA BUSINESS IDENTITY NO._____

SECRETARY OF STATE OF ALABAMA ACCOUNT NO._____

(Note: Secretary of State Account Number shall be filled in only by non-resident bidders)

(Check one) [ ] A Corporation [ ] A Partnership [ ] An Individual Doing Business

hereby proposes to furnish all labor, materials, tools, equipment, and supplies and to sustain all the expenses incurred in performing the Work on the above captioned Project in accordance with the terms of the Contract Documents, and all applicable laws and regulations for the sum listed below. The initial term of the Contract shall extend for sixty (60) calendar days from the date of the Notice to Proceed.

Base Bid:		$	.00
Contingency Allowance:	+	$	250,000.00
Appliance Allowance:	+	$	10,000.00
Sculptural Tree Allowance:	+	$	48,000.00
Sculptural Water Feature Allowance:	+	$	10,000.00
IT and Security Allowance:	+	$	150,000.00
Total Base Bid:		$	.00

(Fill in here and in Total Bid below)

TOTAL BASE BID: _____

_____ Dollars, ($ **.00**)
(Amount in Words) (Amount in Figures)

Deductive Alternates:

Alternate #1: Open Bay between Column line 1 and 2.	-	$	.00
Alternate #2: Lobby Ceiling. Replace with already scheduled ACT.	-	$	.00
Alternate #3: Reduce the Sculptural Tree Allowance by $40,000 to $8000	-	$	.00
Alternate #4: All millwork with the exception of the Information Desk and break room.	-	$	.00
Alternate #5: Remove Entry water feature and planters. Remove Allowance for water feature bubbler.	-	$	.00
Alternate #6: Remove all site lighting north of the Building along the pathways and terraces. Remove all dedicated utility lines serving these lights. Site lighting in parking lot and entrance to remain.	-	$	.00
Alternate #7: Remove the contemplation space from the site and all dedicated utility runs serving it.	-	$	.00

_____Dollars & No Cents $_____.00
Amount in Words Amount in #'s

Unit Prices:

Unit pricing for the following items shall be indicated below for use during any contract scope negotiations:

Concrete (CY) **$_____**

Asphalt (CF) **$_____**

Site Lighting- pathway (per fixture) **$_____**

Site Lighting- pole lighting (per fixture) **$_____**

Pavers (SF installed) **$_____**

Sod (SY installed) **$_____**

Sculptural Tree (EA) **$_____**

(Note: Show amount in both words and figures. In case of discrepancy, the amount in words shall govern). **Bids shall be provided in whole dollar amount with no cents.**

CONTINGENCY ALLOWANCE: $250,000.00 lump sum Contingency Allowance shall be included in the Total Bid for work related to unforeseen conditions as approved by the Owner.

BID SECURITY: The undersigned Bidder agrees that the attached Bid Security, as a Cashier's Check drawn on a bank registered to do business in the State of Alabama and which is a member of the Federal Deposit Insurance Corporation, or a Bid Bond, made payable to the City of Mobile, in the amount of 5% of the bid amount, but in no event more than $10,000, as the proper measure of liquidated damages which the City will sustain by the failure of the undersigned to execute the Contract. Said Bid Security shall become the property of the City of Mobile as liquidated damages as specified in the Contract Documents.

AMERICANS WITH DISABILITIES ACT (ADA): The undersigned Bidder agrees to fully comply with all requirements of the Americans with Disabilities Act of 1990 and the Amendment Act.

NONDISCRIMINATION: Contractor shall comply with all Federal, State and local laws concerning nondiscrimination, including but not limited to City of Mobile Ordinance No. 14-034 which requires, *inter alia*, that all contractors performing work for the City of Mobile not discriminate on the basis of race, creed, color, national origin or disability, require that all subcontractors they engage do the same, and make every reasonable effort to assure that fifteen percent of the work performed under contract be awarded to socially and economically disadvantaged individuals and business entities.

Contractor shall comply the Equal Opportunity Clause as outlined in the Required Attachments for RESTORE Direct Component (Bucket 1) Construction Contracts, including Title 41 of the Code of Federal Regulations (CFR) Articles 60-1.4 Equal Opportunity Clause; 60-4.2 Solicitations; and 60.4.3 Equal Opportunity Clause.

SIGNATURE: If the undersigned Bidder is incorporated, the entire legal title of the company followed by "a corporation" should be used. If Bidder is an individual, then that individual's full legal name followed by doing business as (d/b/a) and name of firm, if any, should be used. If Bidder is a partnership, then full name of each partner should be listed followed by "d/b/a" and name of firm, if any.

Ensure that name and exact arrangement thereof is the same on all forms submitted with this Bid. If a word is abbreviated in the official company name, such as "Co.", then use that abbreviation. If not abbreviated in the official name, spell out.

Bidder agrees not to revoke or withdraw this Bid until ninety (90) calendar days following the time and date for receipt of bids. If notified in writing of the acceptance of this Bid within this time period, Bidder agrees to execute a Contract based on this Bid on the proscribed form within ten (10) calendar days of said notification and to furnish Performance Bond and Materials and Payment Bond as specified.

COMPANY NAME:_____
(Printed or Typed)

BY:_____
(Signature of Company Officer)

COMPANY OFFICER:_____
(Printed or Typed)

TITLE_____ **DATE**_____**, 2024**
(Printed or Typed)

Sworn to and subscribed before me this _____ day of _____2024

_____
Notary Public

Attachments:
1. Bid Security, with Power of Attorney
2. Secretary of State Authorization (Out of state bidders only)
3. Sales Tax Form C-3A
4. ADCNR Subcontractor Listing Form

END OF BID FORM

ACCOUNTING OF SALES TAX
ATTACHMENT TO BID FORM SECTION 00400
SALES TAX FORM C-3A

To: City of Mobile **Date:**_____

Name of Project: Africatown Welcome Center
Project Number: CL-036-21

SALES TAX ACCOUNTING

Pursuant to Act 2013-205, Section 1(g) the Contractor accounts for the sales tax NOT included in the bid proposal form as follows:

	ESTIMATED SALES TAX AMOUNT
OPTION ONE BASE BID:	$_____
DED ALT. #1:	$_____
DED ALT. #2:	$_____
DED ALT. #3:	$_____
DED ALT. #4:	$_____
DED ALT. #5:	$_____
DED ALT. #6:	$_____
DED ALT. #7:	$_____

Failure to provide an accounting of sales tax shall render the bid non-responsive. Other than determining responsiveness, sales tax accounting shall not affect the bid pricing nor be considered in the determination of the lowest responsible and responsive bidder.

Legal Name of Bidder_____

Mailing Address_____

***By (Legal Signature)**_____

*Name (type or print)_____ (Seal)

*Title_____

Telephone Number_____

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

Approved by OMB
4040-0013

1. * Type of Federal Action:
- [ ] a. contract
- [x] b. grant
- [ ] c. cooperative agreement
- [ ] d. loan
- [ ] e. loan guarantee
- [ ] f. loan insurance

2. * Status of Federal Action:
- [ ] a. bid/offer/application
- [x] b. initial award
- [ ] c. post-award

3. * Report Type:
- [x] a. initial filing
- [ ] b. material change

4. Name and Address of Reporting Entity:

[x] Prime [ ] SubAwardee

** Name*

** Street 1* *Street 2*

** City* *State* *Zip*

Congressional District, if known:

5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:

6. * Federal Department/Agency:

7. * Federal Program Name/Description:

CFDA Number, *if applicable:*

8. Federal Action Number, *if known:*

9. Award Amount, *if known:*

$

10. a. Name and Address of Lobbying Registrant:

Prefix ** First Name* *Middle Name*

** Last Name* *Suffix*

** Street 1* *Street 2*

** City* *State* *Zip*

b. Individual Performing Services (including address if different from No. 10a)

Prefix ** First Name* *Middle Name*

** Last Name* *Suffix*

** Street 1* *Street 2*

** City* *State* *Zip*

11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

*** Signature:**

***Name:** *Prefix* ** First Name* *Middle Name*

** Last Name* *Suffix*

Title: **Telephone No.:** **Date:**

Federal Use Only:

Authorized for Local Reproduction
Standard Form - LLL (Rev. 7-97)

OFFICE OF SUPPLIER DIVERSITY

CITY OF MOBILE

Subcontracting and Major Supplier Plan

Contact Office of Supplier Diversity for questions on completing this form.
Via emai:Archnique.kidd@cityofmobile.org
251.208.7967
205 Government Street, 5th Floor

Bidders and Proposers – Please complete and submit these forms as required by your City of Mobile Bid or Proposal Specification.

If you are submitting a proposal in response to a Request for Qualifications, Request for Proposal, or other solicitation ("Solicitations") issued by the City of Mobile, the bid specification may require you to utilize disadvantaged business enterprise ("DBE") subcontractors and suppliers. If DBE participation is required, you must complete and submit these forms with your proposal. If required, failure to submit this form will render your bid non-responsive. NOTE: To satisfy participation requirements for a federally funded project, you must utilize DBEs certified through the Alabama Unified Certification Program.

If DBE participation is required, and you fail to satisfy the participation requirement, you must show that you made a good faith effort to include such participation; you will be required to submit DBE Compliance Form 2 and include additional information if needed. When so required, failure to address adequately the good faith effort factors on Form 2 will render your bid or proposal non-responsive. The "good faith effort" factors on Form 2 are not intended to be a mandatory, exhaustive, or exclusive.

You are encouraged to work with the City of Mobile Supplier Diversity Manager when preparing this form. Please consult with the City Supplier Diversity Manager for a list of eligible DBEs. The "good faith effort" factors on **Form 2** are not intended to be mandatory, exhaustive, or exclusive; they are a tool to help you, and the City of Mobile, determine whether you made efforts which, by their scope, intensity, and appropriateness to the objective, would reasonably be expected to fulfill the participation requirement.

About **"DBEs"**: Disadvantaged business enterprise or DBE means a for-profit small business concern (1) That is at least 51 percent owned by one or more individuals who are both socially and economically disadvantaged or, in the case of a corporation, in which 51 percent of the stock is owned by one or more such individuals; and (2) whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it.

About **"Good Faith" Effort**: Good faith efforts means efforts to achieve a DBE goal or other requirement of this part which, by their scope, intensity, and appropriateness to the objective, can reasonably be expected to fulfill the program requirement. The City of Mobile expects contractors holding large contracts to recruit and engage DBEs to be a part of their team.

Failure to submit this form, when so required by the bid or proposal specification, will render your bid non-responsive.

Contact Office of Supplier Diversity for questions on completing this form.
Via emai:Archnique.kidd@cityofmobile.org
251.208.7967
205 Government Street, 5th Floor

FORM 1: Background and Plan

Section I. Information about your company

Company	
Address	
Telephone	
E-Mail	

RFP/RFQ Solicitation Number	
Project Description	
Is your company a DBE company?	Yes ☐ No ☐
Work force demographics	Male _____ Female _____ Minority _____ Non-minority _____ SDVO _____ Total #of Employees _____

Subcontractor/Major Supplier Plan submitted by:

Printed Name: _____

Signature: _____ Date: _____

Title: _____

The following employee will be designated as the **DBE Liaison** for all communication regarding DBE participation including documentation for DBE participation and maintenance of records of Good Faith Efforts for this contract award:

Name: _____ Title: _____

Email: _____ Phone: _____

Contact Office of Supplier Diversity for questions on completing this form.
Via emai:Archnique.kidd@cityofmobile.org
251.208.7967
205 Government Street, 5th Floor

FORM 1: Background and Plan (Cont'd

Section II. Subcontractors/Major Vendors Supplier Plan submitted by:

Please Print Company_____ Your Bid/Proposal Amount $_____ Date:

_____/ _____/_____ Description_____

Name of Bidder/Proposer: _____

I intend to use the following subcontractors: (Attach additional pages if necessary)

Subcontractor or Major Supplier	Phone	Scope of Work to be performed	$$ Value to be Performed	% Of Your Bid Amount	DBE?	Official Verification Only

Form 2: Good Faith Effort Documentation

Name of Bidder: _____

Contact Person: _____ Phone_____ Email_____

Please complete this form if you are unable to identify DBE subcontractors or suppliers to reach 15% of the value of your bid.

YES (□)	NO (□)	Did you do these suggested areas for DBE recruitment and engagement
		PRE-BID MEETING(S): The bidder attended all pre-bid meetings scheduled by the City to inform DBEs of contracting and subcontracting opportunities.
		CMDBE/ALDOT DBE LIST(S): The bidder utilized the Office of Supplier Diversity's list or lists of certified through the Alabama Department of Transportation UCP DBE Listing
		SMALL CONTRACT(S): The bidder selected specific portions of the work to be performed by DBEs in order to increase the likelihood of meeting the DBE goals (including breaking down contracts into smaller units to facilitate DBE participation). Consider support services, including insurance, accounting, temporary labor, and transportation, landscaping, and janitorial as potential areas for DBE use.
		FOLLOW-UP: The bidder followed-up initial indications of interest by DBEs by contacting those DBEs to determine with certainty if they remained interested in bidding.
		GOOD FAITH NEGOTIATIONS: The bidder negotiated in good faith with interested DBEs and did not reject DBEs as unqualified without sound business reasons based on a thorough investigation of their capabilities. Bidders are not expected to engage unqualified subcontractors or subcontractors whose pricing, after negotiation, remains excessive or unreasonable. (Please document qualification deficiencies or unreasonable pricing if it prevented your engagement of specific DBE subcontractors.)
		ADVERTISEMENT: The bidder advertised in general circulation and/or trade association publications concerning subcontracting opportunities and allowed DBEs reasonable time to respond.
		INTERNET ADVERTISING: The bidder advertised DBE and/or subcontracting opportunities in the newspaper or other internet portals that are accessible to DBEs and/or potential subcontractors.

		INFORMATION: The bidder provided interested DBEs with adequate information about the plans, specifications and requirements of the subcontract.
		WRITTEN NOTICE(S): The bidder/proposer took the necessary steps to provide written notice in a manner reasonably calculated to inform DBEs of subcontracting opportunities and allowed sufficient time for them to participate effectively.
		COMMUNITY RESOURCES: The bidder/proposer used the services of available community organizations, small and/or disadvantaged business assistance offices and other organizations that provided assistance in the recruitment and placement of DBE firms.

CONTRACT RECORDS:
The bidder/proposer has maintained the following records for each DBE that has bid on the subcontracting opportunity:
1. Name, address, email address and telephone number
2. A description of information provided by the bidder/proposer or subcontractor; and
3. A statement of whether an agreement was reached, and if not, why not, including any reasons for concluding that the DBE was unqualified to perform the job.

Section 2(B)

_____ There are not ways to break out 15% of the value of this contract for subcontractors / suppliers. Provide further detail in Section2(c) if the inability to break-out 15% of the value of the contract was the reason, or a reason, you could not meet the participation requirements.

_____ Could not find sufficient DBEs to provide subcontracting or supplier services.

_____ DBEs were available but did not have sufficient qualifications or experience to meet the needs of this contract.

Please indicate additional efforts you have taken to recruit and engage DBEs. _____

_____

_____

SECTION 00500
STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

PART 1 GENERAL

A. This section includes the STANDARD FORM OF AGREEMENT BETWEEN OWNER and CONTRACTOR, AIA Document A101, wherein the basis of payment is a Stipulated Sum; the document has been electronically modified to meet the Owner's requirements and shall be used for the Project.

DRAFT

AIA® Document A101™ – 2017

Standard Form of Agreement Between Owner and Contractor

where the basis of payment is a Stipulated Sum

AGREEMENT made as of the « » day of « » in the year « »
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

«City of Mobile »« »
«P. O. Box 1827 »
«Mobile, Alabama 36633-1827 »
« »

and the Contractor:
(Name, legal status, address and other information)

«.»
« »
« »

«City of Mobile Business License Number: »
«Secretary of State Registration Number: »

for the following Project:
(Name, location and detailed description)

« Africatown Welcome Center Phase II – Engineering and Design »
«1959 Bay Bridge Road CTF »
« Mobile, Alabama 36610 »
« CL-036-21 »

The Architect:
(Name, legal status, address and other information)

« Mott MacDonald Architects, Inc.»
« 107 St Francis St #2900 »
« Mobile, AL 36602 »

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101™–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201™–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

AIA Document A101™ – 2017. Copyright © 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1967, 1974, 1977, 1987, 1991, 1997, 2007, 2017 and 2021 by The American Institute of Architects. **All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law.** This draft was produced by AIA software at 11:03:48 on 10/02/2017 under Order No.1510507108 which expires on 08/29/2018, and is not for resale.
User Notes: (1949587802)

TABLE OF ARTICLES

1 THE CONTRACT DOCUMENTS

2 THE WORK OF THIS CONTRACT

3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

4 CONTRACT SUM

5 PAYMENTS

6 DISPUTE RESOLUTION

7 TERMINATION OR SUSPENSION

8 MISCELLANEOUS PROVISIONS

9 ENUMERATION OF CONTRACT DOCUMENTS, INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others (See attachment Exhibit A).

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:
(Check one of the following boxes.)

[«X »] A date set forth in a notice to proceed issued by the Owner.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:
(Check one of the following boxes and complete the necessary information.)

[« X »] Not later than «» («») calendar days from the date of the Notice to Proceed for commencement of the Work.

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

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ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be « and 00/100 Dollars » ($ «00.00»), subject to additions and deductions as provided in the Contract Documents.

Base Bid:	$
Contingency Allowance:	$
Total Bid:	$

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price
Alt. No. 1 – Open bay between Column Line 1 and 2. Alt. No. 2 – Replace Lobby Ceiling with already scheduled ACT. Alt. No. 3 – Reduce the Monument Tree allowance to $8000. Alt. No. 4 – Remove all millwork with the exception of the Information Desk and Break Room. Alt. No. 5 – Remove Entry Water Feature and Planters. Remove bubbler allowance. Alt. No. 6 – Remove All Site Lighting North of the Building along the pathways and terraces. Alt. No. 7 – Remove the Contemplation Space from the site and all dedicated utility runs servicing the space.	

§ 4.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Contingence Allowance	$250,000.00
Appliance Allowance	$10,000.00
Monument Tree Allowance	$48,000.00
Water Feature Allowance	$10.000.00
IT and Security Allowance	$150,000.00

Contingency Allowance: Two Hundred Fifty Thousand and 00/100 Dollars ($250,000.00)

A. Contingency Allowance shall cover cost of material, labor, overhead, profit and other expenses for complete installation of items of additional work as required for a complete, functional project.
B. Contingency Allowance shall be used for unforeseen conditions not covered in the construction documents.
C. All extra work under this section must be authorized by the Owner, in writing, prior to materials or undertaking work.
D. Upon completion of the Work, the unused portion of the Allowance shall be credited back to the Owner in the form of a Change Order.
E. Allowances are subject to the same provision of AIA 201 Article 7.3.7.

§ 4.4 Unit prices, if any:
(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit ($0.00)
1. Concrete	Per Cubic Yard	
2. Asphalt	Per Cubic Foot	
3. Monument Trees	Each	

§ 4.5 Liquidated damages:
(Insert terms and conditions for liquidated damages, if any.)

«A time charge equal to Two Hundred Fifty and 00/100 Dollars ($250.00) per calendar day will be made against the Contractor for the entire period that any part of the Work remains uncompleted or any required closeouts documents

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are not acceptably submitted for more than thirty (30) days after the date specified for the substantial Completion of the Work, the amount of which shall be deducted by the owner, and shall be retained by the Owner out of monies otherwise due the Contractor in the final payment, not as a penalty, but as liquidated damages sustained. »

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the 25th of the month.

« »

§ 5.1.3 Provided that an Application for Payment in acceptable format is received by the Architect not later than the first «1st » day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the tenth «10th » day of the «following » month. If an Application for Payment in acceptable format is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than «forty » («40 ») days after the Architect receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This accepted schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201, General Conditions of the Contract for Construction (including Owner's then-current modifications), and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- **.1** That portion of the Contract Sum properly allocable to completed Work;
- **.2** That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing and insured as specified;
- **.3** Completed work shall be determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

- **.1** The aggregate of any amounts previously paid by the Owner;
- **.2** The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
- **.3** Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- **.4** For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and
- **.5** Retainage withheld pursuant to Section 5.1.7.

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§ 5.1.6.3 Any Progress Payment shall include partial release of liens for material and labor for previous application for payment amount approved and paid. The ADCNR subcontractor listing form shall be included with the pay application.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:
(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

« Five percent (5%) of one hundred percent (100%) of the completed work until one hundred percent (100%) of the work is completed. Increases in the contract sum by Change Order shall also be subject to retainage.»

§ 5.1.7.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

«N/A »

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:
(Insert any other conditions for release of retainage upon Substantial Completion.)

«The net amount of the Retainage shall be equal to two and one half percent (5%) of total Contract Sum, as increased or decreased by Change Order. »

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201.

§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 Final Payment

§ 5.2.1 Final monthly progress payment, constituting the entire unpaid balance of the Contract Sum, less retainage, shall be made by the Owner to the Contractor when

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A201 (including Owner's then-current modifications which may be obtained from the Owner or, alternatively, a copy of which is incorporated in the Project Manual and incorporated by reference herein as a part thereof), and to satisfy other requirements, if any, which extend beyond final payment; and

.2 a Certificate of Substantial Completion has been issued by the Architect/Owner and the project accepted.

§ 5.2.2 The Owner's final payment to the Contractor of retainage shall be made as follows:

« The final five percent (5%) of the total Contract Sum retained will not be paid until proof of publication is submitted and all written claims paid in full. Contractor to submit the following:
•Contractor's Affidavit of Payment of Debts and Claims (AIA form G706, included in contract documents) with
a.) Contractor's Release or Waiver of Liens
b.) Releases or Waivers of Liens from Subcontractors and Material and Equipment Suppliers;
•Contractor's Affidavit of Release of Liens (AIA form G706A, included in contract documents);
•Consent of Surety, if any, to final payment (AIA form G707, included in contract documents);
•Any additional close out requirements per the contract documents; and
•Notarized Affidavit of Notice of Completion advertisement from publisher; and
•Any closeout documents required by ADCNR.

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Contractor shall provide proof of publication of Notice of Completion in a local newspaper once per week for four (4) consecutive weeks, as required in the Title 39, Section 39-1-1, Subsection (f), of the Code of Alabama quoted below. "The Contractor shall, immediately after the completion of the contract, give notice of Completion by an advertisement in a newspaper of general circulation published within the city or county in which the work has been done, for a period of four (4) consecutive weeks. A final settlement shall not be made upon the contract until the expiration of thirty (30) days after the completion of the notice. Proof of publication of the notice shall be made by the contractor to the authority by whom the contract was made by affidavit of the publisher and a printed copy of the notice published. If no newspaper is published in the county in which the work is done, the notice may be given by the contract." (Acts 1927, No. 39, 9.37; Acts 1935, No. 39, 9. 70; Code 1940, T. 50, Section 16; Acts 1983, No. 83-737, 9.1203; Acts 1989, No. 89-650m 9. 1284, Section 1; Acts 1994, No. 94-207, p, 270, Section 1; Acts 1997, No. 97-225, p. 348, Section 1.)

The Notice of Completion shall read as follows:

STATE OF ALABAMA
COUNTY OF MOBILE
NOTICE OF COMPLETION
In accordance with Chapter I, Title 39, Code of Alabama, 1975, NOTICE IS HEREBY given that (Contractor) has completed the contract for All persons having any claims for labor, material or otherwise in connection with this project should immediately notify the Architectural Engineering Department, City of Mobile, P. O. Box 1827, Mobile, Alabama 36633-1827.

Publication of the Notice of Completion shall not begin until the Project has been accepted as Substantially Complete by the City of Mobile. »

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Engineer will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

«N/A »

§ 6.2 Binding Dispute Resolution

For any Claim, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

[« X »] Litigation in a court of competent jurisdiction

§ 6.3 Governing Law and Venue

This Agreement shall be governed by the laws of the State of Alabama, and the appropriate venue of any actions arising out of this Agreement shall be a court of proper jurisdiction in Mobile, Alabama.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201, General Conditions of the Contract for Construction, including Owner's then-current modifications, a copy of which is incorporated in the contract documents and incorporated by reference herein as a part thereof..

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201, General Conditions of the Contract for Construction, including Owner's then-current modifications, a copy of which is incorporated in the contract documents and incorporated by reference herein as a part thereof.

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ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents. A copy of such amended, revised or supplemental provision is incorporated in the contract documents and hereby incorporated by reference herein as a part thereof.

§ 8.2 The Owner's representative:
(Name, address, email address, and other information)

«Director, REAM»
«P. O. Box 1827 »
«Mobile, Alabama 36633-1827 »

§ 8.3 The Contractor's representative:
(Name, address, email address, and other information)

« »
« »
« »

« »**§ 8.4** Neither the Owner's nor the Contractor's representative shall be changed without ten (10) days' prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth below:
The Contractor shall purchase and maintain from a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
.4 Claims for damages insured by usual personal injury liability coverage;
.5 Claims for damages, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
.6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
.7 Claims for bodily injury or property damage arising out of completed operations; and
.8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18 of the General Conditions of the Contract for Construction.

The Contractor shall take out and maintain during the life of the Contract no less than the following amounts of insurance with the City of Mobile named as an additional insured. Contractor shall submit a Certificate of Insurance. Insurance companies listed as the "Companies Affording Coverage" shall be authorized by the Secretary of the State of Alabama. Insurance produced out of the State of Alabama must be signed or counter signed by a licensed Agent of Alabama, with the Agent's name, address and telephone number typed or printed on the face of the Certificate of Insurance.

.1 Workmen's Compensation Insurance: - Statutory-amount and coverage as required by all applicable laws, rules or regulations of the State of Alabama.

.2 Employee's Liability Insurance shall be provided for limits of liability not less than:

A. Bodily Injury by Accident $1,000,000 each accident

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B. Bodily Injury by Disease $1,000,000 each employee

C. Bodily Injury by Disease $1,000,000 each policy

.3 The Contractor shall provide Broad Form (commonly termed Comprehensive) General Liability Insurance (including premises-product-completed operations, independent contractors, and blanket contractual liability), specifically covering the obligations assumed by the Contractor for limits of liability not less than:

A.	Bodily Injury	$1,000,000 each person $1,000,000 each occurrence
B.	Property Damage	$1,000,000 each occurrence; or
C.	Bodily Injury and Property Damage	$1,000,000 combined single limit

.4 Such comprehensive policy shall include the following:

A. All liability of the Contractor, for the Contractor's Direct Operations.
B. Subcontractor's Operations.
C. Completed Operations Cover, thereby meaning any loss which shall occur after the contract has been completed, but which can be traced back to the Contract.
D. General Aggregate Limit shall apply on a "Per Project" Basis.
E. Contractual Liability, meaning thereby; any risk assumed by the Contractor under Hold Harmless Agreements or any other assumption of liability, but specifically items 11.1.1.8.3G herein below
F. Broad Form Property damage Coverage, including Completed Operations.
G. Personal Injury Liability, with employee's exclusions removed.
H. Explosion and Collapse Hazard:
Included or X Not Applicable.
I. Underground Hazard:
Included or X Not Applicable.

.5 The Contractor shall carry for himself and shall require that all Subcontractors and all Owners of Automobiles or trucks rented or hired on the contract carry, until the Contracts is completed, Comprehensive Automobile Liability Coverage for Bodily Injury and property. Damage for any auto in amounts not less than the minimum amounts as indicated. The Contractor and Subcontractor shall also carry for themselves insurance for all non-owned and hired automobile at the limits of liability as indicated below:

A.	Bodily Injury	$1,000,000 each person $1,000,000 each occurrence
B.	Property damage	$1,000,000 each occurrence; or,
C.	Bodily Injury and Property damage	$1,000,000 combined single limit

.6 Umbrella/Excess Liability: $2,000,000 combined single limit each occurrence for bodily injury and/or property damage

.7 Builder's Risk Coverage (Property Insurance): The Contractor shall carry for the Owner, himself, and all Subcontractors a Builder's Risk Policy to cover the full amount of the Contract during construction, fabrication or erection of any equipment.

A. The Contractor shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis. Such property insurance shall be maintained, unless otherwise provided in the

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Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors, Sub-subcontractors, and the Design Professionals in the Project.

B. Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

C. If the property insurance requires deductibles, the Contractor shall pay costs not covered because of such deductibles. Deductibles shall be limited to a maximum of $2,500.00 unless the loss is caused by windstorm; then deductible shall be a maximum of three percent (3%) of the insured value.

D. This property insurance shall cover the full value of equipment, material, and other portions of the Work stored off the site, and also portions of the Work in transit. There shall be no limits on the value of loss per occurrence.

E. A named storm endorsement is required. The deductible shall be a maximum of three percent (3%) of the insured value.

.8 A Surety authorized to do business in the State of Alabama shall furnish the required Insurance.

.9 The standard ACORD™ format shall be provided. The ACORD™ Certificate must be signed or countersigned by a Licensed Resident Agent of the State of Alabama and the agent's name, address and telephone number must appear on the face of the certificate.

.10 The Surety must have a minimum rating of A/Class VI as reported in the latest issue of Best's Key Rating Guide Property-Casualty, published by Alfred M. Best Company, Inc. if the bid price exceeds $50,000.00.

The insurance shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

Certificates of insurance acceptable to the Owner shall be filed with the Owner within ten (10) calendar days from date of issuance of contract forms for execution. Contractor shall deliver to the City of Mobile, certificates of insurance certifying the existence and limits of the insurance coverages along with separate policy endorsements. Contractor shall also be responsible for delivering policy renewal certificates to the City of Mobile, and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies shall contain a provision that coverages afforded under the policies will not be cancelled subject to non-renewal nor material change, or allowed to expire without at least thirty (30) days' (except ten (10) days from non-payment) prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the time. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

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All policies of insurance, except worker's compensation, shall be endorsed to provide that all such insurances are primary and non-contributing with any other insurance maintained by the City of Mobile and endorsed to waive rights of subrogation in favor of the City of Mobile.

The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's Consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

§ 8.5.2 The Contractor shall provide bonds as set forth below:
Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder.

Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

The Labor and Material Payment Bond and the Performance Bond shall each be for one hundred percent (100%) of the Contract Sum.

1. Bond shall be submitted with the executed agreement on provided form(s).

2. Power of Attorney is required for both bonds.

3. A Surety authorized to do business in the State of Alabama shall furnish both bonds.

4. A Surety licensed to do business in the State of Alabama must execute the bonds.

5. The Surety must have a minimum rating of A/Class VI as reported in the latest issue of Best's Key Rating Guide Property-Casualty, published by Alfred M. Best Company, Inc., if the bid price exceeds $50,000.00.

6. The Surety company shall be required to execute AIA Document G-707, "Consent of Surety to Final Payment" prior to Final Payment being made to the Contractor.

§ 8.6 Indemnification:
The Contractor shall indemnify, defend and hold harmless City and its officers, elected officials, agents, representatives, and employees in respect of any and all claims, injuries, losses, diminution in value, damages, liabilities, whether or not currently due, and related expenses (including without limitation, settlement costs and any legal or other expenses for investigating or defending any actions or threatened actions) arising from or in connection with the contractor's performance under this agreement, including but not limited to, environmental laws, regulations, orders and decrees of whatever character or nature and damage or injury to persons or property. Contractor hereby confirms and agrees that Contractor is not a 'design professional' as defined in Alabama Act 2021-318, and not required to carry professional liability insurance for the performance or obligations of this contract.

§ 8.7 Other Provisions:
«Contractor shall provide a minimum one (1) year warranty from the date of substantial completion of all Labor and Materials for the Work covered by this contract, unless otherwise specified. Labor and Material warranties required by other sections of the construction document shall not conflict with this provision. The most stringent warranty provision shall apply. »

§ 8.8 Force Majeure:
In the event that either party hereto shall be delayed or hindered in or prevented from the performance of any act required hereunder by reason of strikes, lockouts, labor troubles, inability to procure materials, failure of power, restrictive governmental laws or regulations, riots, insurrection, war, Act of God, or other reason of a like nature not the fault of the party delayed in performing work or doing acts required under the terms of this Agreement, then

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performance of such act shall be excused for the period of the delay and the period for the performance of any such act shall be extended for a period equivalent to the period of such delay.

§ 8.9 Retention of Records and Access to Records:
Record Retention: Contractor shall maintain (and require all subcontractors to maintain) records and accounts associated with this Agreement, including, but not limited to, property, personnel and financial records, in accordance with ADCNR's records retention policy and 2 C.F.R. §200.333, as well as all other applicable federal, state and local requirements, the Federal Award and RESTORE Act STC. Such records will be made available to all entities listed below in Paragraph 13(b) and shall be retained for a minimum of three (3) years after expiration of this Agreement, unless ADCNR grants permission in writing to destroy. However, contractor agrees that it is responsible for being familiar with all such retention requirements and maintaining records for periods longer than this 3-year minimum, as applicable." And "Access: The United States Department of the Treasury, Treasury Office of Inspector General, the Government Accounting Office, ADCNR, the Alabama Examiners of Public Accounts, or any of their duly authorized representatives shall have timely and unrestricted access during normal business hours to any pertinent books, documents, papers, and records (including electronic records) of the Subrecipient and its agents, contractors in order to make audits, inspections, financial reviews, excerpts, transcripts and other examinations as directed by law (and to make copies of such). In addition, such rights to access shall include timely and reasonable access to Contractor's personnel for the purpose of interview and discussion related to such records.

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor

.2 AIA Document A201, General Conditions of the Contract for Construction, including Owner's then-current modifications, a copy of which is incorporated in the contract documents and incorporated by reference herein as a part thereof.

.3 Drawings

Number	Title	Date

.4 Specifications

Section	Title	Date

.5 Addenda, if any:

Number	Date

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.6 Other Exhibits:
(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

§ 9.2
Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
N/A			

§ 9.2.1 Other documents, if any, listed below:

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User Notes: (1949587802)

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™–2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

«BIDDING AND CONTRACT REQUIREMENTS

Section 00100	Invitation to Bid
Section 00200	Instructions to Bidders-AIA Document A701-2018
Section 00300	Supplementary Instructions to Bidders
Section 00400	Bid Form
	Accounting of Sales Tax Form C-3A
	Supplier Diversity Subcontracting and Major Supplier Plan
Section 00500	Standard Form of Agreement Between Owner and Contractor AIA Document A101
Section 00600	Bonds, Certificates and Affidavits
	Performance Bond
	Labor and Material Payment Bond
	E-Verify Documentation (Sample)
	Application and Certificate for Payment-AIA Document G702and G703 with DBE Utilization Report
	Certificate of Substantial Completion-AIA Document G704
	Contractor's Affidavit of Payment of Debts and Claims-AIA Document G706
	Contractor's Affidavit of Release of Liens-AIA Document G706A
	Consent of Surety to Final Payment-AIA Document G707
	Request for Taxpayer Identification Number and Certification W9 Tax Form and City of Mobile Vendor Information Form
Section 00700	General Conditions of the Contract for Construction-AIA Document A201»

§ 9.2.2 Best Management Practices (BMPs):
The Contractor shall be responsible for providing, implementing and maintaining BMPs for sediment and erosion control in full compliance with all applicable Local, State and Federal Codes and Ordinances throughout the contract period. All Work shall be in accordance with the Clean Water Act; the Alabama Water Pollution Control Act; the current version of the Alabama Handbook for Erosion Control, Sediment Control Stormwater Management on Construction sites and Urban Areas; and the current version of the Mobile, Alabama City Code Chapter 17 Stormwater Management and Flood Control. All Waste water with oils, grease, paint, mortar, etc., shall be properly contained and disposed of.

§ 9.2.3 Contractor shall comply with all Federal, State and local laws concerning nondiscrimination, including but not limited to City of Mobile Ordinance No. 14-034 which requires, *inter alia*, that all contractors performing work for the City of Mobile not discriminate on the basis of race, creed, color, national origin or disability, require that all subcontractors they engage do the same, and make every reasonable effort to assure that fifteen percent of the work performed under contract be awarded to socially and economically disadvantaged individuals and business entities.

§ 9.2.4 By signing this contract, the contracting parties affirm, for the duration of the agreement, that they will not violate federal immigration law or knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama. Furthermore, a contracting party found to be in violation of this provision shall be deemed in breach of the agreement and shall be responsible for all damages resulting therefrom.

§ 9.2.5 Public Contracts with Entities Engaging in certain Boycott Activities:
By signing this contract, the Contractor further represents and agrees that it is not currently engaged in, nor will it engage in, any boycott of a person or entity based in or doing business with a jurisdiction with which the State of Alabama can enjoy open trade.

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§ 9.2.6 Severability Clause:
In case any one or more of the provisions contained in this Agreement shall for any reason be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provisions of this Agreement, but this Agreement shall be construed as if such invalid or illegal or unenforceable provision had never been contained herein. Upon such determination that any term or other provision is invalid, illegal or unenforceable, the court or other tribunal making such determination is authorized and instructed to modify this Agreement so as to effect the original intent of the parties as closely as possible so that the transactions and agreements contemplated herein are consummated as originally contemplated to the fullest extent possible.

§ 9.2.7 Non-Agency Clause:
Contractor, in the performance of its operations and obligations hereunder, shall not be deemed to be an agent of City but shall be deemed to be an independent Contractor in every respect and shall take all steps at its own expense, as City may from time to time request, to indicate that it is an independent Contractor. City does not and will not assume any responsibility for the means by which or the manner in which the services by Contractor provided for herein are performed, but on the contrary, Contractor shall be wholly responsible therefore.

REMAINDER OF PAGE INTENTIONALLY LEFT BLANK

DRAFT

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User Notes: (1949587802)

This Agreement entered into as of the day and year first written above.

City of Mobile

Legal Name of Party to Contract:
Contractor:

OWNER *(Signature)*

CONTRACTOR *(By Signature)*

William S. Stimpson, Mayor

(Printed name and title)

(Printed name and title)

ATTEST:

_____
City Clerk

STATE OF ALABAMA
COUNTY OF MOBILE
Before me, the undersigned a Notary Public in and for said County and State, personally appeared as President of , Inc. and after being duly sworn, did depose and say that he, as such officer and with full authority, signed the above and foregoing voluntarily as the act of said corporation on the day the same bears date.
Sworn to and subscribed for me this _____ day of _____, 20_____.

_____
NOTARY PUBLIC
My Commission Expires: _____

DRAFT

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User Notes: (1949587802)

SECTION 00600

BONDS, CERTIFICATES AND AFFIDAVITS

PART 1 GENERAL

This section includes the Bond Forms and Certificates that are to be used on this Project. No other forms will be accepted. Forms may be obtained from the Architectural Engineering Department, City of Mobile, telephone number 251-208-7454.

1.1 FORMS

A. PERFORMANCE BOND. Owner's modified Performance Bond form.

B. LABOR AND MATERIAL PAYMENT BOND. Owner's modified Payment Bond form.

C. E-Verify Documentation (Sample)

D. APPLICATION AND CERTIFICATION FOR PAYMENT - AIA Document G702 and AIA Document G703 and DBE Utilization Report

E. CERTIFICATE of SUBSTANTIAL COMPLETION – AIA Document G704-2017

F. CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS - AIA Document G706

G. CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIENS - AIA Document G706A.

H. CONSENT OF SURETY TO FINAL PAYMENT - AIA Document G707

I. Request for Taxpayer Identification Number and Certification, W-9 Form, and City of Mobile Vendor Information Form

PERFORMANCE BOND

Any singular reference to Contractor, Surety, Owner or other Party shall be considered plural where applicable.

KNOW ALL MEN BY THESE PRESENTS: That the Contractor, _____, _____,_____, hereinafter called the Principal, and _____ _____, hereinafter called the Surety, are held and firmly bound unto the **City of Mobile, P. O. Box 1827, Mobile, AL 36633**, hereinafter called the Owner, in the penal sum of _____ and xx/100 Dollars ($_____.00) for payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns for the faithful performance of a certain written Contract dated the _____ day of _____, 2023 entered into between the Principal and the City of Mobile for furnishing all labor, material, equipment and insurance and performing all Work required to properly complete City of Mobile, Africatown Welcome Center (CL-036-21) 1959 Bay Bridge Road Cutoff, Mobile, Alabama, a copy of which said Contract is incorporated herein by reference and is made a part hereof as if fully copied herein.

NOW, THEREFORE, the condition of this obligation is such that if the Principal shall faithfully perform the terms and conditions of the Contract in all respects on its part and shall fully pay all obligations incurred in connection with the performance of such Contract on account of labor and materials used in connection therewith, and all such other obligations of every form, nature and character, and shall save harmless the Owner from all and any liability of every nature, kind and character which may be incurred in connection with the performance or fulfillment of such Contract or other such and liability resulting from negligence or otherwise on the part of such Principal and further save harmless the Owner from all cost and damage which may be suffered by reason of the failure to fully and completely perform said contract and shall fully reimburse and repay the Owner for all expenditures of every kind, character, and description which may be incurred by the Owner in making good any and every default which may exist on the part of the Principal in connection with the performance of said Contract; and further that the Principal shall pay all lawful claims of all persons, firms, partnerships, or corporations for all labor performed and material furnished in connection with the performance of the Contract, and that the failure to do so with such persons, firms, partnerships or corporations shall give them a direct obligation; and provided, however, that no suit, action, or proceedings by reason of any default whatever shall be brought on this bond after two years from the date on which the final payment on the Contract falls due, and provided, further, that if any alterations or additions which may be made under the Contract, or in the work to be done under it, or the giving by the Owner of any extensions of time for the performance of the Contract or any other forbearance being expressly waived. This obligation shall remain in full force and effect until the performance of all covenants, terms and conditions herein stipulated and after such performance, it shall become null and void.

In addition to any other legal mode of service, service of summons, and other process in civil actions brought in Mobile County may be had on the Contractor or the Surety on the bond by leaving a copy of the summons and complaint or other pleading or process with the Mayor of the City of Mobile which shall bind the principal Contractor and Surety to the mode of service above described and that the service shall be the same as personal service on the contractor or surety. This Bond is given pursuant to the terms of Alabama Code, Title 39-1-1, et. al., As Amended.

EXECUTED IN FOUR (4) COUNTERPARTS.

SIGNED, SEALED AND DELIVERED this ____ day of _____, 2023.

CONTRACTOR AS PRINCIPAL
Company: _____
(Corporate Seal)

By: _____
(Signature)

Name and Title: _____

SURETY
Company:_____
(Corporate Seal)

By: _____
(Signature)

Name and Title: _____

Resident Agent: _____
(Signature)

Name and Title: _____
Company Name:_____
Address: _____
_____
Phone and Fax: _____

Owner's Representative: Cassie Boatwright
REAM Director
PO Box 1827
Mobile, AL 36633
251-208-7454

LABOR AND MATERIAL PAYMENT BOND

Any singular reference to Contractor, Surety, Owner or other Party shall be considered plural where applicable.

KNOW ALL MEN BY THESE PRESENTS: That the Contractor**,** _____, _____, _____ , as Principal, and _____ _____, as Surety, are held and firmly bound unto the **City of Mobile, P. O. Box 1827, Mobile, AL 36633** (hereinafter called the "Obligee") in the penal sum of _____ and xx/100 ($_____.00) lawful money of the United States, for the payment of which sum well and truly to be made we bind ourselves, our heirs, personal representatives, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, said Principal has entered into a certain Contract with said Obligee, dated the ____ day of _____, 2023 (hereinafter called the "Contract") for furnishing all labor, material, equipment and insurance and perform all work required to properly complete City of Mobile, Africatown Welcome Center (CL-036-21) 1959 Bay Bridge Road Cutoff, Mobile, Alabama, which**, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH** that if said Principal and all subcontractors to whom any portion of work provided for in said Contract is sublet and all assignees of said Principal and of such subcontractors shall promptly make payments to all persons supplying him or them with labor, materials or supplies for or in the prosecution of the work provided for in such Contract, or in any amendment or extension of or additions to said Contract, and for the payment of reasonable attorney's fees, incurred by the claimant or claimants in suits on each bond, then the above obligations shall be void; otherwise to remain in full force and effect. **PROVIDED,** however, that this bond is subject to the following conditions and limitations.

(a) Any person, firm or corporation that has furnished labor, materials or supplies for or in the prosecution of the work provided for in said contract shall have a direct right of action against the Principal and Surety on this bond, which right of action shall be asserted in a proceeding instituted in the County in which the work provided for in said Contract is to be performed or in any county in which said Principal and Surety does business. Such right of action shall be asserted in a proceeding instituted in the name of the claimant or claimants for his or their use and benefit against said Principal and Surety or either of them (but not later than one year after the final settlement of said Contract) in which action such claim or claims shall be adjudicated and judgment rendered thereon.

(b) The Principal and Surety hereby designate and appoint _____ **Attorney-In-Fact,** as the agent of each of them to receive and accept service of process or other pleading issued or filed in any proceeding instituted on this bond and hereby consent that such service shall be the same as personal service on the Principal and/or Surety. In addition to any other legal mode of service, service of summons, and other process in civil actions brought in Mobile County may be had on the Contractor or the Surety on the bond by leaving a copy of the summons and complaint or other pleading or process with the Mayor of the City of Mobile which shall bind the principal Contractor and Surety to the mode of service above described and that the service shall be the same as personal service on the contractor or surety.

(c) The Surety shall not be liable hereunder for damage or compensation recoverable under any Workmen's Compensation or Employer's Liability Statute.

(d) In no event shall the Surety be liable for a greater sum than the penalty of this bond, or subject to any suit, action or proceeding thereon that is instituted later than two years after the final settlement of said Contract.

(e) This bond is given pursuant to the terms of Alabama Code, Title 39-1-1, et. al., As Amended.

EXECUTED IN FOUR (4) COUNTERPARTS.

SIGNED, SEALED AND DELIVERED this ____ day of _____, 2023

CONTRACTOR AS PRINCIPAL
Company: _____
(Corporate Seal)

By: _____
(Signature)

Name and Title:
_____

SURETY
Company: _____
(Corporate Seal)

By: _____
(Signature)

Name and Title:_____

Resident Agent: _____
(Signature)
Name and Title: _____
Company Name: _____
Address: _____
_____
Phone and Fax: _____

Owner's Representative: Cassie Boatwright
REAM Director
PO Box 1827
Mobile, AL 36633
251-208-7454

Company ID Number:

Approved by:

Employer		
Name (Please Type or Print)		
Signature		Date
Department of Homeland Secu[illegible] Division		
Name (Please Type or P[illegible]		Title
Signature		Date

SAMPLE

E-Verify

Company ID Number:

Information Required for the E-Verify Program **Information relating to your Company:**	
Company Name	
Company Facility Address	
Company Alternate Address	
County or Parish	
Employer Identification Num	
North American Industry Classification Systems Code	
Parent Company	
Number of Employees	
Number of Sites Verified for	

SAMPLE

APPLICATION AND CERTIFICATION FOR PAYMENT

AIA DOCUMENT G702 PAGE ONE OF PAGES

TO OWNER City of Mobile
P. O. Box 1827
Mobile, AL 36633-1827

PROJECT:

APPLICATION NO:

Distribution to:
☐ OWNER
☐ ARCHITECT
☐ CONTRACTOR
☐
☐

PERIOD TO:

FROM CONTRACTOR:

VIA ARCHITECT:

PROJECT NO:

CONTRACT FOR:

CONTRACT DATE:

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract.
Continuation Sheet, AIA Document G703, is attached.

1. ORIGINAL CONTRACT SUM		$
2. Net change by Change Orders		$
3. CONTRACT SUM TO DATE (Line 1 ± 2)		$
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)		$
5. RETAINAGE:		
a. _____ % of Completed Work (Column D + E on G703)	$	
b. _____ % of Stored Material (Column F on G703)	$	
Total Retainage (Lines 5a + 5b or Total in Column I of G703)		$
6. TOTAL EARNED LESS RETAINAGE (Line 4 Less Line 5 Total)		$
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT (Line 6 from prior Certificate)		$
8. CURRENT PAYMENT DUE		$
9. BALANCE TO FINISH, INCLUDING RETAINAGE (Line 3 less Line 6)		$

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner		
Total approved this Month		
TOTALS		
NET CHANGES by Change Order		

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:

By: _____ Date: _____

State of: County of:
Subscribed and sworn to before me this day of
Notary Public:
My Commission expires:

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising the application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED . . . . . $ _____

(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and onthe Continuation Sheet that are changed to conform with the amount certified.)
ARCHITECT:

By: _____ Date: _____

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

AIA DOCUMENT G702 · APPLICATION AND CERTIFICATION FOR PAYMENT · 1992 EDITION · AIA · ©1992 THE AMERICAN INSTITUTE OF ARCHITECTS, 1735 NEW YORK AVE., N.W., WASHINGTON, DC 20006-5292

Users may obtain validation of this document by requesting a completed AIA Document D401 - Certification of Document's Authenticity from the Licensee.

CONTINUATION SHEET

AIA DOCUMENT G703

PAGE OF PAGES

AIA Document G702, APPLICATION AND CERTIFICATION FOR PAYMENT, containing Contractor's signed certification is attached.

In tabulations below, amounts are stated to the nearest dollar.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:

APPLICATION DATE:

PERIOD TO:

ARCHITECT'S PROJECT NO:

A	B	C	D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G ÷ C)	BALANCE TO FINISH (C - G)	RETAINAGE (IF VARIABLE RATE)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
	GRAND TOTALS								

Users may obtain validation of this document by requesting of the license a completed AIA Document D401 - Certification of Document's Authenticity

OFFICE OF SUPPLIER DIVERSITY

CITY OF MOBILE

DBE Compliance

DBE UTILIZATION REPORT

Return to Office of Supplier Diversity
Via email: archnique.kidd@cityofmobile.org
or
P.O. Box 1948
Mobile, AL 36633

CONTRACTOR:	**Certified DBE:** YES NO	**Contract Start Date:**
DESCRIPTION:		**Estimated Completion Date:**

This report is for the month of: (CHECK ONE):

JAN	APR	JULY	OCT
FEB	MAY	AUG	NOV
MARCH	JUNE	SEPT	DEC

FINAL _____

Original Contract Amount	Total Amount of Contract Changes (change orders or amendments)	Final Contract Amount (include contract changes)	Payments to Date from City of Mobile	OFFICE USE ONLY (Verification)
$	$	$	$	

Instructions: List all DBEs utilized on the contract, whether or not the firms were originally listed for DBE goal credit. List actual amount paid to each DBE firm. If the established Percentage is not being met, please include a narrative description of the progress being made in DBE participation.

DBE SUBCONTRACTOR	DBE DESCRIPTION OF WORK	DBE SUBCONTRACT AMOUNT	DBE PAYMENTS THIS REPORT	PAYMENTS TO DATE	OFFICE USE ONLY (Verification)
		$	$	$	
		$	$	$	
		$	$	$	
		$	$	$	
TOTALS		$	$	$	

I HEREBY CERTIFY THAT THE INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT. SUPPORTING DOCUMENTATION IS ON FILE AND IS AVAILABLE FOR INSPECTION BY CITY OF MOBILE OFFICE OF SUPPLIER DIVERSITY PERSONNEL AT ANY TIME.

PRINT NAME: _____

SIGNATURE: _____, _____ ___/___/____
(Title) (Date)

AIA® Document G704® – 2017

Certificate of Substantial Completion

PROJECT: *(name and address)*	**CONTRACT INFORMATION:** Contract For: Date:	**CERTIFICATE INFORMATION:** Certificate Number: 001 Date:
OWNER: *(name and address)*	**ARCHITECT:** *(name and address)*	**CONTRACTOR:** *(name and address)*

The Work identified below has been reviewed and found, to the Architect's best knowledge, information, and belief, to be substantially complete. Substantial Completion is the stage in the progress of the Work when the Work or designated portion is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The date of Substantial Completion of the Project or portion designated below is the date established by this Certificate.
(Identify the Work, or portion thereof, that is substantially complete.)

ARCHITECT *(Firm Name)*	**SIGNATURE**	**PRINTED NAME AND TITLE**	**DATE OF SUBSTANTIAL COMPLETION**

WARRANTIES
The date of Substantial Completion of the Project or portion designated above is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below:
(Identify warranties that do not commence on the date of Substantial Completion, if any, and indicate their date of commencement.)

WORK TO BE COMPLETED OR CORRECTED
A list of items to be completed or corrected is attached hereto, or transmitted as agreed upon by the parties, and identified as follows:
(Identify the list of Work to be completed or corrected.)

The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Unless otherwise agreed to in writing, the date of commencement of warranties for items on the attached list will be the date of issuance of the final Certificate of Payment or the date of final payment, whichever occurs first. The Contractor will complete or correct the Work on the list of items attached hereto within ( ) days from the above date of Substantial Completion.

Cost estimate of Work to be completed or corrected: $

The responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work, insurance, and other items identified below shall be as follows:
(Note: Owner's and Contractor's legal and insurance counsel should review insurance requirements and coverage.)

The Owner and Contractor hereby accept the responsibilities assigned to them in this Certificate of Substantial Completion:

CONTRACTOR *(Firm Name)*	**SIGNATURE**	**PRINTED NAME AND TITLE**	**DATE**
OWNER *(Firm Name)*	**SIGNATURE**	**PRINTED NAME AND TITLE**	**DATE**

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User Notes:
(3B9ADA51)

AIA® Document G706™ – 1994

Contractor's Affidavit of Payment of Debts and Claims

PROJECT: *(Name and address)*	**ARCHITECT'S PROJECT NUMBER:**	OWNER: ☐ ARCHITECT: ☐
	CONTRACT FOR: General Construction	CONTRACTOR: ☐
TO OWNER: *(Name and address)*	**CONTRACT DATED:**	SURETY: ☐ OTHER: ☐

STATE OF:
COUNTY OF:

The undersigned hereby certifies that, except as listed below, payment has been made in full and all obligations have otherwise been satisfied for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or Owner's property might in any way be held responsible or encumbered.

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Consent of Surety to Final Payment. Whenever Surety is involved, Consent of Surety is required. AIA Document G707, Consent of Surety, may be used for this purpose

Indicate Attachment ☐ Yes ☒ No

The following supporting documents should be attached hereto if required by the Owner:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.
3. Contractor's Affidavit of Release of Liens (AIA Document G706A).

CONTRACTOR: *(Name and address)*

BY: _____
(Signature of authorized representative)

_____
(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:
My Commission Expires:

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AIA® Document G706A™ – 1994

Contractor's Affidavit of Release of Liens

PROJECT: *(Name and address)*	**ARCHITECT'S PROJECT NUMBER:**	OWNER: ☐
	CONTRACT FOR: General Construction	ARCHITECT: ☐
TO OWNER: *(Name and address)*	**CONTRACT DATED:**	CONTRACTOR: ☐
		SURETY: ☐
		OTHER: ☐

STATE OF:
COUNTY OF:

The undersigned hereby certifies that to the best of the undersigned's knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services who have or may have liens or encumbrances or the right to assert liens or encumbrances against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.

CONTRACTOR: *(Name and address)*

BY:

_____
(Signature of authorized representative)

_____
(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:
My Commission Expires:

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AIA® Document G707™ – 1994

Consent Of Surety to Final Payment

PROJECT: *(Name and address)*	**ARCHITECT'S PROJECT NUMBER:**	OWNER: ☐
	CONTRACT FOR: General Construction	ARCHITECT: ☐
TO OWNER: *(Name and address)*	**CONTRACT DATED:**	CONTRACTOR: ☐
		SURETY: ☐
		OTHER: ☐

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(Insert name and address of Surety)

, SURETY,

on bond of
(Insert name and address of Contractor)

, CONTRACTOR,

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety of any of its obligations to
(Insert name and address of Owner)

, OWNER,

as set forth in said Surety's bond.

IN WITNESS WHEREOF, the Surety has hereunto set its hand on this date:
(Insert in writing the month followed by the numeric date and year.)

_____
(Surety)

_____
(Signature of authorized representative)

Attest:
(Seal):

_____
(Printed name and title)

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CITY OF MOBILE, AL
VENDOR INFORMATION FORM

Company Information:

1. City Vendor Number:

2. Name of Company:

3. Company D.B.A. Name, if any:

4. Mailing Address:

5. Remittance Address:

6. Telephone:

7. Fax

8. Main Email:

Primary Contact:

9. Contact Name and Title:

10. Contact Phone:

11. Contact Fax:

12. Contact Email:

Alternate Contact (if applicable):

13. Alt. Contact Name and Title:

14. Alt. Contact Phone:

15. Alt. Contact Fax:

16. Alt. Contact Email:

City of Mobile Business License Information:

17. City of Mobile Business License No. (if required):

Please attach additional sheets if necessary.

Form **W-9**
(Rev. December 2011)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

Give Form to the requester. Do not send to the IRS.

Print or type
See Specific Instructions on page 2.

Name (as shown on your income tax return)

Business name/disregarded entity name, if different from above

Check appropriate box for federal tax classification:
☐ Individual/sole proprietor ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ►

☐ Other (see instructions) ►

☐ Exempt payee

Address (number, street, and apt. or suite no.)

Requester's name and address (optional)

City, state, and ZIP code

List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on the "Name" line to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Social security number

			–			–				

Employer identification number

		–							

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
3. I am a U.S. citizen or other U.S. person (defined below).

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 4.

Sign Here | **Signature of U.S. person** ► | **Date** ►

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

Note. If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

SECTION 00700

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION,
AIA DOCUMENT A201 - 2007

PART 1 GENERAL

This section includes the GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, AIA Document A-201, that is to be used for this Project. The document has been electronically modified to meet the City of Mobile's requirements and shall be used for the project.

AIA® Document A201™ – 2007

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

THE OWNER:
(Name, legal status and address)
City of Mobile
Architectural Engineering Department
P. O. Box 1827
Mobile, Alabama 36633-1827

THE ARCHITECT:
(Name, legal status and address)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 BASIC DEFINITIONS

§ 1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding requirements.

§ 1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by separate contractors.

§ 1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

§ 1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 INSTRUMENTS OF SERVICE

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, Project Manual, specifications, and other similar materials.

§ 1.1.8 INITIAL DECISION MAKER

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2.

§ 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

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§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 CAPITALIZATION

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 INTERPRETATION

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

ARTICLE 2 OWNER

§ 2.1 GENERAL

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 ~~The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.~~

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or

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the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.2 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.2.3 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the ~~site.~~ site, as may be required. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.4 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.2.5 ~~Unless otherwise provided in the Contract Documents, the~~ The Owner shall furnish to the Contractor ~~one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.~~up to ten copies of the drawings and specifications as required for Contractor's execution of the Work. Any additional sets of documents that the contractor desires for construction of the Project will be issued to contractor at actual printing and handling costs.

§ 2.3 OWNER'S RIGHT TO STOP THE WORK

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

§ 3.1 GENERAL

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

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§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall make Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required means, methods, techniques, sequences or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

3.3.4 Three (3) days after the opening of the Bids, the Contractor shall furnish for written approval, an outline of the education, experience and character of the Contractor's project manager, superintendent and engineer. Any future substitution must have prior written approval of the Architect.

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§ 3.4 LABOR AND MATERIALS

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to ~~them.~~them.

3.4.4 The Contractor's or his Subcontractor's supervisors and workmen engaged on special work or skilled Work in any supervisory position or trade shall be qualified and have had sufficient education, training and experience as a recognized professional or master mechanic in such Work to perform it properly and satisfactorily as prescribed in the Contract Documents.

3.4.5 Any project manager, superintendent, engineer, foreman or workman employed by the Contractor or by a subcontractor who, in the sole opinion of the Architect, does not perform his Work in a proper and skillful manner or becomes party to disrespectful, intemperate, disorderly, intoxicated, or dishonest behavior, or uses foul language, fights, commits criminal act(s) falsifies records and construction, covers-up faulty Work or materials, does not comprehend or follow instructions, does not get along with the Architect or Owner's representative, or is otherwise objectionable, shall, at the written request by the Architect, be discharged 24 hours by the Contractor or Subcontractor employing such project manager, superintendent, engineer, foreman or workman, and shall not be employed again or any portion of the Work without the written consent of the Architect.

3.4.6 Should the Contractor fail to remove such person or persons specified in Article 3.4.5 hereinabove or fail to furnish suitable and sufficient machinery, equipment, materials or qualified labor force for the proper execution of the Work, the Architect may withhold all payments which are or may become due the Contractor or may suspend the Work until such orders are complied with.

3.4.7 Contractor shall abide by provisions of Section 14-1 and Section 14.2, Code of the City of Mobile, originally adopted December 10, 1991. Prohibiting Discrimination in Employment by Contractors, Subcontractors and Vendors performing Work and providing materials and supplies for the City of Mobile. A copy of said Code is located in the City's Projects Architectural Engineering Department. Certification of compliance with this requirement shall be made for all persons involved in the Work by the signature of the General Contractor on the Bid Form (Section 00410).

§ 3.5 WARRANTY

The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.6 TAXES

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

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§ 3.7 ~~PERMITS, FEES, NOTICES AND COMPLIANCE WITH LAWS~~
PERMITS, FEES, NOTICES, AND COMPLIANCE WITH LAWS

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure ~~and pay for the building permit as well as for~~ City of Mobile building permit without cost, and shall secure and pay for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

3.7.1.1 The Contractor shall secure building and other permits customarily obtained from the City of Mobile at no cost.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 **Concealed or Unknown Conditions.** If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may proceed as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 ALLOWANCES

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

.1 ~~Allowances~~ allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

.3 ~~Whenever~~ whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

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§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 SUPERINTENDENT

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the name and qualifications of a proposed superintendent. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Architect requires additional time to review. Failure of the Architect to reply within the 14 day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, ~~promptly~~ within ten (10) business days after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals

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upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents ~~in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule,~~ with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Architect without action. Wherever Shop Drawings are required in these Specifications, Shop Drawings shall be submitted for approval before materials are fabricated. Drawings shall show complete details. The General Contractor shall check and approve them either in writing or by stamp before forwarding to the Architect. The Architect will mark copies "Approved" if correct; or, "Approved As Noted" if only minor corrections are necessary. If major corrections are necessary they will be noted on the Shop Drawings and they will be returned to the Contractor for correction and resubmission. Submit four (4) copies for Architect's and Owner's use plus the number of copies the contractor requires for his own use.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor

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shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.13 USE OF SITE

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 CUTTING AND PATCHING

§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

§ 3.15 CLEANING UP

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 ACCESS TO WORK

The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

§ 3.17 ROYALTIES, PATENTS AND COPYRIGHTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

§ 3.18 INDEMNIFICATION

§ 3.18.1 To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity ~~that~~ which would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be

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liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

3.19 As applicable, the Contractor shall be responsible at the appropriate time during construction of the Project to have all permanent meters installed (electrical, water, gas, etc.) and all utilities connected prior to the time of Final Inspection. The Contractor shall pay all utilities costs until the Project is accepted by the City of Mobile.

ARTICLE 4 ARCHITECT

§ 4.1 GENERAL

§ 4.1.1 The Owner shall retain an architect lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number. "Architect" may also designate the Licensed Designer of the Project and may be an Engineer or Landscape Architect.

§ 4.1.2 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

§ 4.1.3 If the employment of the Architect is terminated, the Owner shall employ a successor architect as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 4.2 ADMINISTRATION OF THE CONTRACT

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative ~~during construction until the date the Architect issues the final Certificate for Payment.~~ (1) during construction (2) until all conditions necessary for the final completion and payment have been fulfilled and (3) with the Owner's concurrence, from time to time during the one-year period for correction of Work described in Section 12.2. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract ~~Documents.~~Documents, unless otherwise modified in writing in accordance with other provisions of the Contract.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

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§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

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ARTICLE 5 SUBCONTRACTORS

§ 5.1 DEFINITIONS

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

§ 5.2.1 ~~Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract,~~ The apparent low bidder, within (3) days after bids are opened ~~shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect requires additional time for review. Failure of the Owner or Architect to reply within the 14 day~~ 14 day period ~~shall constitute notice of no reasonable objection.~~

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. ~~If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.~~

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 SUBCONTRACTUAL RELATIONS

By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

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.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation ~~shall~~ may be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. ~~If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.~~

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

§ 6.2 MUTUAL RESPONSIBILITY

§ 6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a separate contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a separate contractor's delays, improperly timed activities, damage to the Work or defective construction.

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§ 6.2.4 The Contractor shall promptly remedy damage the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or separate contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 OWNER'S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 GENERAL

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents. The total of all Change Orders on each contract shall not exceed ten percent (10%) of the contract price for each project and shall be subject to at least one of the following criteria:

.1 Minor changes for a total monetary value less than required for competitive bidding under the State Competitive Bid Laws.

.2 Changes for matters relatively minor and incidental to the original contract necessitated by unforeseen circumstances arising during the course of the Work.

.3 Emergencies arising during the course of the Work on the Contract.

.4 Changes or Alternates provided for in the original bidding where there is no difference in price on the Change Order from the original best bid on the Alternate.

.5 Changes of relatively minor items not contemplated when the plans and specifications were prepared and the project was bid which are in the public interest.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

§ 7.2 CHANGE ORDERS

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect stating their agreement upon all of the following:

.1 The change in the Work;

.2 The amount of the adjustment, if any, in the Contract Sum; and

.3 The extent of the adjustment, if any, in the Contract Time.

.4 There shall be attached to each Change Order a signed statement from the Architect containing the following:

A. A statement of what the Change Order covers and who instituted the Change Order and why it is necessary or desired.

B. A statement setting forth the reasons for using the Change Order method rather than taking new competitive bids.

C. A statement that all prices have been reviewed and found reasonable, fair and equitable and recommending approval of the same.

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes

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in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

.2 Unit prices stated in the Contract Documents or subsequently agreed upon;

.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

.4 As provided in Section 7.3.7.

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices ~~shall~~ may be equitably adjusted.

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.6 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.7 ~~If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract~~ Sum, an ~~amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. allowance of 10% mark-up on Subcontractor's direct cost (actual cost of Labor & Materials) and 15% mark-up on a Contractor's direct (actual cost of Labor & Materials).~~ In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

.1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;

.2 Costs of materials, supplies and equipment, including cost of transportation, ~~whether incorporated or consumed;~~actually incorporated or consumed in the work;

.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented ~~from~~ by the Contractor or others;

.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and

.5 Additional costs of supervision and field office personnel directly attributable to the change.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be

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reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 MINOR CHANGES IN THE WORK

The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.

ARTICLE 8 TIME

§ 8.1 DEFINITIONS

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 PROGRESS AND COMPLETION

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

.1 No Work shall commence and no materials ordered until the Owner issues the written Notice to Proceed.

.2 The Work shall be commenced within ten (10) days of the date of a written Notice to Proceed.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by delay authorized by the ~~Owner pending mediation and arbitration;~~ Owner; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

8.4 LIQUIDATED DAMAGES

8.4.1 Time is the essence of the Contract. Any delay in the completion of the Work as provided for in the Contract Documents will cause inconvenience to the public and loss and damage to the Owner in interest, and in additional administrative, architectural, inspection, and supervision charges.

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Therefore, a time charge equal to $250.00 per calendar day will be made against the Contractor for the entire period that any part of the Work remains uncompleted or any required closeouts documents are not acceptably submitted for more than 30 days after the time specified for the Substantial Completion of the Work, the amount of which shall be deducted by the Owner, and shall be retained by the Owner out of monies otherwise due the Contractor in the final payment, not s a penalty, but as liquidated damages sustained.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.2 SCHEDULE OF VALUES

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Architect, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

.1 Unit Prices and Allowances, if stated in the Contract Documents, shall be identified within the Schedule of Values.

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 ~~At least ten days before the date established for each progress payment, the~~ The Contractor shall submit to the Architect ~~an itemized Application for Payment prepared in accordance with the~~ on the first of each month; for Work done through the 25th of the preceding month, four (4) original, itemized Applications for Payment for Work completed in accordance with the accepted schedule of values, if required under Section ~~9.2,~~ 9.2., for completed portions of the Work. Such application shall be ~~notarized, if required,~~ notarized and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such ~~as~~ copies of requisitions from ~~Subcontractors~~ subcontractors and material suppliers, and shall reflect retainage ~~if provided for in the Contract Documents~~ and documents as follows:

~~.1 Until the final payment is made, the Owner shall pay ninety-seven and one half percent (97.5%) of the amount due the Contractor on account of progress payments (note: the 2-1/2% retainage is calculated by withholding the first 5% of the first 50% of the work completed); and~~

.2 The Contractor shall provide documentation substantiating that test, inspections and approvals for portions of Work included in an Application for Payment and required by the Contract Documents, or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction were made at the appropriate time.

§ 9.3.1.1 ~~As provided in Section 7.3.9, such~~ Such applications may include requests for payment on account of changes in the ~~Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.~~ Work, which have been authorized and approved by properly executed Change Order(s).

§ 9.3.1.2 ~~Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.~~ Such applications may Include requests for payment on account of changes in the Work, which have been authorized and approve by properly executed Change Order(s).

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

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§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

.1 defective Work not remedied;

.2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;

.3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;

.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;

.5 damage to the Owner or a separate contractor;

.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or

.7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.3 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the

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Owner makes payments by joint check, the Owner shall notify the Architect and the Architect will reflect such payment on the next Certificate for Payment.

§ 9.6 PROGRESS PAYMENTS

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor no later than seven days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.7 FAILURE OF PAYMENT

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the ~~Architect or awarded by binding dispute resolution,~~ Architect, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time ~~shall~~ may be extended appropriately and the Contract Sum ~~shall~~ may be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 SUBSTANTIAL COMPLETION

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

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§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such ~~Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.~~ Work.

§ 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 FINAL COMPLETION AND FINAL PAYMENT

§ 9.10.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed

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to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final ~~payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.~~payment, (5), contractors Affidavit of Release of Liens, (6) separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers (7) written warranty on Contractor's letterhead covering materials and labor for one year, and (8) the advertisement of completion. The Contractor shall provide proof of publication of Advertisement of completion in a local newspaper for four (4) consecutive weeks, as required in Title 39, Section 39-1-1, Subsection (f), of the Code of Alabama. The final 2.5% retained will not be paid until proof of publication is submitted and all written claims paid in full. This advertisement shall not begin until the City of Mobile has accepted the Project.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the ~~Contractor or by issuance of Change Orders affecting final completion,~~ Contractor, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

.1 ~~liens,~~ Claims, security interests or encumbrances arising out of the Contract and unsettled;

.2 failure of the Work to comply with the requirements of the Contract Documents; or

.3 terms of special warranties required by the Contract Documents.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 SAFETY OF PERSONS AND PROPERTY

§ 10.2.1 The Contractor shall comply with all Federal, State and Local law regarding safety including the requirements of the Occupational Safety and Health Act of 1970, Public Law #91-596, latest revision. Contractor shall take all other reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

.1 employees on the Work and other persons who may be affected thereby;

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

.4 The Contractor shall be responsible for damage done to buried cables and other utilities by its equipment and shall contact the appropriate offices prior to construction for information depth, etc., of utilities in the area.

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§ 10.2.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and ~~loss (other than damage or loss insured under property insurance required by the Contract Documents)~~ loss) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 INJURY OR DAMAGE TO PERSON OR PROPERTY

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 HAZARDOUS MATERIALS

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and ~~start-up.~~start-up, except to the extent that any such delay is attributable to the Contractor's objection to the persons or entities whom Owner shall have furnished to perform the task of removal of safe containment of such material or substance.

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§ 10.3.3 ~~To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is due to the fault or negligence of the party seeking indemnity.~~

§ 10.3.4 The Owner shall not be responsible ~~under this Section 10.3 for materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.~~for materials or substances brought to the site by the Contractor regardless of whether such materials or substances were required by the Contract Documents.

§ 10.3.5 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence or wantonness on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner ~~shall indemnify~~ may reimburse the Contractor for all reasonable cost and expense thereby incurred.

§ 10.4 EMERGENCIES

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency ~~shall~~ may be determined only as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR'S LIABILITY INSURANCE

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;

.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;

.4 Claims for damages insured by usual personal injury liability coverage;

.5 Claims for damages, ~~other than to the Work itself,~~ because of injury to or destruction of tangible property, including loss of use resulting therefrom;

.6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;

.7 Claims for bodily injury or property damage arising out of completed operations; and

.8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

The Contractor shall take out and maintain during the life of the Contract no less than the following amounts of insurance with the Owner named as an additional insured. Contractor shall submit a Certificate of Insurance and a supplemental Attachment for Certificate of Insurance 25-2 (7/90), AIA Document G715, Insurance companies listed as the "Companies Affording Coverage"

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shall be authorized by the Secretary of the State of Alabama. Insurance produced out of the State of Alabama must be signed or counter signed by a Resident Agent of Alabama, with the Resident Agent's name, address and telephone number typed or printed on the face of the Certificate of Insurance.

.1 Workmen's Compensation and Employer's Liability Insurance: - Statutory-amount and coverage as required by law of place in which the Work is performed.

.2 Employee's Liability Insurance shall be provided for limits of liability not less than:

A.	Bodily Injury by Accident	$1,000,000 each accident
B.	Bodily Injury by Disease	$1,000,000 each employee

.3 The Contractor shall provide Broad Form (commonly termed Comprehensive) General Liability Insurance (including premises-product-completed operations) for limits of liability not less than:

A.	Bodily Injury	$1,000,000 each person $1,000,000 each occurrence
B.	Property Damage	$1,000,000 each occurrence; or
C.	Bodily Injury & Property Damage	$1,000,000 combined single limit

4. Such comprehensive policy shall include the following:

A. All liability of the Contractor, for the Contractor's Direct Operations.
B. Subcontractor's Operations.
C. Completed Operations Cover, thereby meaning any loss which shall occur after the contract has been completed, but which can be traced back to the Contract.
D. Contractual Liability, meaning thereby; any risk assumed by the Contractor under Hold Harmless Agreements or any other assumption of liability, but specifically Items 11.1.1.8.3G herein below
E. Broad Form Property damage Coverage, including Completed Operations.
F. Personal Injury Liability, with employee's exclusions removed.
G. The Contractor shall indemnify and save harmless the Owner against all loss, cost, or damaged on account of injuries to persons or property occurring in the performance of the Contract, including all reasonable attorney's fees incurred by the Owner, on account thereof.
H. Explosion and Collapse Hazard:
Included or ☒ Not Applicable.
I. Underground Hazard:
Included or ☒ Not Applicable.

5. The Contractor shall carry for himself and shall require that all Subcontractors and all Owners of Automobiles or trucks rented or hired on the contract carry until the Contract is completed. Comprehensive Automobile Liability Coverage for Bodily Injury and property Damage in amounts not less than the minimum amounts as indicated. The Contractor and Subcontractor shall also carry for themselves insurance for all non-owned and hired automobile at the limits of liability as indicated below:

A.	Bodily Injury	$1,000,000 each person $1,000,000 each occurrence
B.	Property damage	$1,000,000 each occurrence; or,
C.	Bodily Injury & Property damage	$1,000,000 combined single limit

6. Excess Liability: $2,000,000 limit

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7. Builder's Risk Coverage. The Contractor shall carry for the Owner, himself, and all Subcontractor's a Builder's Risk Policy to cover the full amount of the Contract during construction, fabrications or erection of any equipment.

8. A Surety authorized to do business in the State of Alabama shall furnish the required insurance.

9. The ACCORD™ Certificate must be signed or countersigned by a Licensed Resident Agent of the State of Alabama and the agent's name, address and telephone number must appear on the face of the certificate.

10. The Surety must have a minimum rating of A/Class VI as reported in the latest issue of Best's Key Rating Guide Property-Casualty, published by Alfred M. best Company, Inc., if the bid price exceeds $50,000.00

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's ~~consultants~~ Consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

§ 11.2 OWNER'S LIABILITY INSURANCE

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

§ 11.3 PROPERTY INSURANCE

§ 11.3.1 ~~Unless otherwise provided, the Owner~~ The Contractor shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional ~~deductibles.~~ deductibles (See 11.1.1 Supplement Builder's Risk Coverage). Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

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§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.3.1.3 If the property insurance requires deductibles, the ~~Owner~~ Contractor shall pay costs not covered because of such deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

~~**§ 11.3.1.5** Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.~~

~~**§ 11.3.2 BOILER AND MACHINERY INSURANCE**~~

~~The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.~~

~~**§ 11.3.3 LOSS OF USE INSURANCE**~~

~~The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.~~

~~**§ 11.3.4** If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.~~

~~**§ 11.3.5** If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.~~

~~**§ 11.3.6** Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable~~

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~~conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.~~

~~§ 11.3.7 WAIVERS OF SUBROGATION~~

~~The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.~~

~~§ 11.3.8 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.~~

~~§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.~~

~~§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.~~

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 The ~~Owner shall have the right to require the Contractor to~~ Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising ~~thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.~~thereunder.

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

11.4.3. The Labor and Material Payment Bond and Performance Bond shall each be for one hundred percent (100%) of the Contract price if the Contract Price is greater than $10,000.00

1. Cost of the bonds shall be included in the bid.

2. Bonds shall be submitted with the executed agreement on provided form(s).

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3. Power of Attorney is required for both bonds.

4. A Surety authorized to do business in the State of Alabama shall furnish both bonds.

5. A Surety licensed to do business in the State of Alabama must execute the bonds.

6. Each bond must be signed or countersigned by a Resident Agent of the State of Alabama.

7. The Surety must have a minimum rating of A/Class VI as reported in the latest issue of Best's Key Rating Guide Property-Casualty, published by Alfred M. Best Company, Inc., if the bid price exceeds $50,000.00.

8. The Surety company shall be required to execute AIA Document G-707, "Consent of Surety to Final Payment" prior to Final Payment being made to the Contractor.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 UNCOVERING OF WORK

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 AFTER SUBSTANTIAL COMPLETION

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

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§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 ACCEPTANCE OF NONCONFORMING WORK

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 GOVERNING LAW

The Contract shall be governed by the law of the ~~place where the Project is located except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.~~

State of Alabama.

§ 13.2 SUCCESSORS AND ASSIGNS

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

13.2.3 No assignment of the Contract shall be made without the written permission of Surety providing bonding and the City of Mobile.

§ 13.3 WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

§ 13.4 RIGHTS AND REMEDIES

§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach there under, except as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public

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authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses shall be at the Contractor's expense.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

13.5.7 Test, inspections or approvals made in addition to the Architects normal design and contract administration services caused by the Contractor shall be paid for by the Contractor. The normal service schedule is contained in Article 2.8.1 of AIA B102-2007 as amended by the Owner and is available to Contractor on request.

13.5.8 The Contractor must call the Urban Development Department of the City of Mobile for their inspections and approval at the times required by the Urban Development Department, as well as notify the Architect, Consulting Engineer, and/or Test Laboratory, for inspection and approval of sub-grade conditions, under slab and footing Conditions, vapor barrier placement, reinforcing steel placement, all structural connections, electrical, mechanical, etc. None of the above will be accepted that have been covered up before receiving approval of the Architect or his Consultant.

§ 13.6 INTEREST

~~Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.~~

§ 13.7 TIME LIMITS ON CLAIMS

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7.

13.8 COMMENCEMENT OF STATUTORY LIMITATION PERIOD

13.8.1 As between the Owner and Contractor:

1. Before Substantial Completion. As to acts or failures to act occurring prior to the relevant date of Substantial Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Substantial Completion;

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2. Between Substantial Completion and Final Payment. As to acts or failures to act occurring subsequent to the relevant date of Substantial Completion and prior to the final payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all event snot later than the date of issuance of the final Certificate for Payment; and

3. After Final Payment. As to acts or failures to act occurring after the relevant date of the final Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any act or failure to act by the Contractor pursuant to any Warranty provided under Section 3.5, the date of any correction of the Work or failure to correct the Work by the Contractor under Section 3.5, the date of any correction of the Work or failure to correct the Work by the Contractor under Section 12.2, or the date of actual commission of any other act or failure to perform any duty or obligation by the Contractor or Owner, whichever occurs last.

13.9 SUBSTITUTION OF MATERIALS AND EQUIPMENT

13.9.1 Whenever a material, article or piece of equipment is identified on the Drawings or in the Specifications by reference to manufacturer's or vendor's names, trade names, catalog numbers, or the like, it is so identified for the purpose of establishing a standard, and any material, article, or piece of equipment of other manufacturers or vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article, or piece of equipment so proposed is, in the opinion of the Architect, of equal substance, appearance and function. It shall not be purchased or installed by the Contractor without the Architect's written approval.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 TERMINATION BY THE CONTRACTOR

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;

.2 An act of government, such as a declaration of national emergency that requires all Work to be stopped;

.3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or

.4 The Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work ~~executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.~~ executed.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

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§ 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the Contractor

.1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;

.3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 Accept assignment of subcontracts pursuant to Section 5.4; and

.3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time ~~shall~~ may be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

.1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of ~~such termination, along with reasonable overhead and profit on the Work not executed.~~termination.

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ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 CLAIMS

§ 15.1.1 DEFINITION

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 15.1.2 NOTICE OF CLAIMS

Claims by either the Owner or Contractor must be initiated ~~by written notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party must be initiated~~ within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant ~~first recognizes~~ acting with due diligence, reasonable should have first recognized the condition giving rise to the Claim, whichever is later. Claims must be initiated by written notice to the Architect and the other party.

§ 15.1.3 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

§ 15.1.4 CLAIMS FOR ADDITIONAL COST

If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the ~~Work.~~ Work giving rise to such claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 INITIAL DECISION

§ 15.2.1 Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no decision having been

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rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The ~~Initial Decision Maker~~ Architect will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the ~~Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion,~~ Architect reasonably concludes that, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons ~~therefor;~~ therefore; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties ~~but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.~~

~~**§ 15.2.6** Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.~~

~~**§ 15.2.6.1** Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.~~

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 MEDIATION

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall not be subject to mediation as a condition precedent to binding dispute resolution.

~~**§ 15.3.2** The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in~~

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writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 ARBITRATION

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 CONSOLIDATION OR JOINDER

§ 15.4.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.

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SECTION 00701

SUPPLEMENTARY GENERAL
CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

THE ATTENTION OF ALL BIDDERS IS CALLED TO THE FOLLOWING GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION:

In addition to the AIA A207-2007 General Conditions of the Contract for Construction, Contractors shall review and comply with all sections included in this amendment to the AIA A201-2007 document. The Contractor, by submitting a bid for construction, confirms that they have reviewed and agree to the conditions of this amendment.

1. AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

A. Contractor shall provide an appropriately completed copy of the "City of Mobile Subcontracting and Major Supplier Plan" in the envelope with their Bid Form. Form shall document DBE Subcontractors participating in the project and, should the total % of DBE participation not meet the 15% minimum, all efforts to obtain DBE Subcontractors shall be documented on or attached to the DBE Form when submitted. During construction, contractors are required to submit a "DBE Utilization Report" with every Pay Application.

B. Prime Contractor it to comply with the 2 CFR 200.320 regarding small and minority business, women's owned business enterprises, and labor surplus area firms.

C. Bidders are required to provide a UEI and proof of active SAM.gov registration. All subcontractors are required to have a UEI and active SAM.gov registration at the time work begins.

2. CONSTRUCTION CHANGE DIRECTIVES

A. AIA A201-2007 - Section 7.3.7:

If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the method and the adjustment of the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, cost for the purpose of this Section 7.3.7 shall be limited to the following:

3. APPLICATIONS FOR PAYMENT

   A. AIA A201-2007 - Section 9.3.1.1:

      Until all work has been completed; the Owner shall pay 95% of the amount due the Contractor on the account of progress payments, and

4. FINAL COMPLETION AND FINAL PAYMENT

   A. The final 5% retained will not be paid until proof of publication is submitted and all written claims paid in full.

END OF SECTION

SECTION 01010

SUMMARY OF THE WORK

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Summary of Work: Contract, contractor use of premises.

B. Contract Considerations: Contingency allowance, schedule of values, applications for payment, change procedures, alternates.

C. Coordination and Meetings: Coordination, field engineering, cutting and patching, meetings, progress meetings, examination, preparation.

D. Submittals: Submittal procedures, construction progress schedules, proposed products list, shop drawings, product data, samples, manufacturers' installation instructions, manufacturers' certificates.

E. Quality Control: Quality assurance - control of installation, Tolerances, References, Mock-ups, Manufacturers' field services and reports.

F. Construction Facilities and Temporary Controls: Electricity, temporary lighting for construction purposes, heat, temporary ventilation, telephone service, water service, temporary sanitary facilities, barriers and fencing, exterior enclosures, protection of installed work, security, access roads, parking, progress cleaning and waste removal, project identification, field offices and sheds, removal of utilities, facilities, and controls.

G. Material and Equipment: Products, transportation, handling, storage, and protection, products options, substitutions.

H. Contract Closeout: Contract closeout procedures, final cleaning, adjusting, project record documents, operation and maintenance data, spare parts and maintenance materials, warranties.

1.2 CONTRACT

A. Summary of Work:

A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following:
   1. The building site is located at Parcel Key R02-29-02-44-0-003-076 on 1959 Bay Bridge Road Cutoff.

2. Existing brick walls (excluding perimeter), ramps, handrails, steps, parking lot, abandoned utilities, and indicated trees and vegetation shall be removed per the plans.
3. The City of Mobile provided Survey and Civil services which are provided in the drawings and specifications.
4. All utilities shall be removed to the main or close to as shown in plan. The site has been open for 20 years and the condition of the utilities are unknown. Contractor shall remove abandoned utilities and check the integrity of the remaining lines and valves prior to making final connections to the building. Utilities found to be unsuitable shall be brought to the Architect's attention.
5. New site Amenities include lighting, parking, sidewalks, flagpoles, selected benches and planters, as well as a basic landscape planting. Other site features constitute alternates to the base bid and are clearly marked.
6. The new building shall be a pre-engineered steel frame structure with light gauge framing infill. Foundation shall be a slab on grade with spread footings. Cladding will consist of brick and tile with aluminum storefront glazing throughout. Roof will be painted steel standing seam on 8" purlins with matching gutters and downspouts.
7. The offices and conference room shall have carpet tile, gypsum sheathing walls with level 4 painted finished and suspended acoustical ceilings.
8. All other rooms will have epoxy flooring. Restrooms will receive tile accent walls, and painted gypsum sheathing ceiling. All other walls throughout will be gypsum sheathing with level 4 painted finished and all other rooms except for the lobby will receive a suspended acoustical ceiling. Lobby ceiling will match the metal soffit system specified.
9. Select walls will receive wall covering- see finish schedule.
10. Along the south wall, smaller storefront systems will be combined with casework to provide display areas for historical artifacts and information. This casework shall also receive lighting and ventilation fans. Surrounding casework shall face the interior.
11. New plastic laminated casework shall be installed at kitchen. All counter surfaces and backsplash shall be solid surface, and the backsplash shall extend to the bottom of the upper cabinets. Faucets, sink and appliances (in an allowance) are included.
12. The building shall receive all new HVAC system and new insulated ductwork, which will be run along the chase space on the south side of the facility. Through wall vents shall provide conditioned air into the lobby area. All other rooms will have ceiling registers and returns. The building will be heated and cooled using three DX units as scheduled. The mechanical systems will be controlled utilizing programmable thermostats with humidity control to maintain a cooling design temperature of 74 degrees and a heating design temperature of 70 degrees and XXX humidity. The new units shall be installed in the mechanical closet, on the east end of the building. Refer to site plans for condensing unit locations – they will be installed on a concrete pad across the entrance drive from the facility in a screened enclosure.

13. The building shall receive all new plumbing Sch. 40. DWV, PVC and PEX supply piping. The plumbing system for the building will be connected directly to the sanitary sewer. The domestic hot water for the restrooms and break area will be provided by a new instant water heaters. The lavatories and sinks will be provided with 120-degree hot water. All hand wash sinks will be provided with ASSE-1070 thermostatic mixing valve to reduce the hot water temperature from 140 degrees to 110 degrees. All new plumbing fixtures shall be ADA compliant.
14. The building shall receive all new interior and exterior lighting. Interior and exterior lighting will be provided at levels and controls to comply with ASHRAE 90.1-2013. Exterior lighting will be on a dusk to dawn photocell. Exit signs and emergency light fixtures will be provided with battery packs. All receptacles, outlets and respective plates shall be stainless steel and matching. Power to the building will be 240 volt-1phase. Electrical distribution will consist of a main panelboard on the and sub-panels located in the mechanical room.
15. Provisions for data and communication systems will consists of Cat 5 cable, conduit, and junction boxes at locations shown in plan. A rack shall be provided in the IT closet and all cabling shall have a minimum of 10' extra coiled, terminated, and labeled inside the IT room.
16. A new intrusion detection and fire alarm system shall be installed by the City's security solutions vendor, but the cost of the cable, equipment and labor shall be included in the bid.
17. The building shall receive a combined intrusion detection and fire alarm system.
18. There is an allowance for appliances listed on the bid form.
19. There is a contingency allowance for unforeseen conditions listed on the bid form.
20. There will be alternates- see the project bid form and alternates specification section.
21. Other Work indicated in the Contract Documents.

B. Contract Description: Stipulated sum.

1.3 CONTRACTOR USE OF PREMISES

A. Limit use of premises to allow continued Owner occupancy. All facilities shall remain in use except the immediate work area for this project. Obey all Facility Regulations and coordinate access and schedule of work with Project Manager.

B. Add special conditions of the work here…..restrictions in area, schedule, etc. If you don't have anything, delete this paragraph.

1.4 CONTINGENCY ALLOWANCE

A. Include in the Contract the stipulated amount for use upon Owner's instruction.

B. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit are included in Change or Field Orders authorizing expenditure of funds from this Contingency Allowance.

1.5 SCHEDULE OF VALUES

A. Submit Schedule of Values on AIA Form G703 within five (5) calendar days of notification of project award.

1.6 APPLICATIONS FOR PAYMENT

A. Submit two signed and notarized originals of each application on AIA Form G702 and AIA Form G703. Submit Lien Release Waivers, including from subcontractors and major suppliers, with each pay application.

B. Content and Format: Utilize Schedule of Values, AIA Form G703, for listing items in Application for Payment.

C. Payment Period: Monthly, except for final payment of retainage after all Close Out documents are submitted and approved.

1.7 CHANGE ORDER PROCEDURES

A. All contract changes involving a change in scope, payment and/or time shall be made by change order.

B. Stipulated Sum/Price Change Order: Based on Proposal Request and Contractor's fixed price quotation or Contractor's request for a Change Order as approved by Owner.

1.8 ALTERNATE BID ITEMS

A. Alternates quoted on Bid Form, if any, will be reviewed and accepted in the order listed.

B. Coordinate related Work and modify surrounding Work as required.

C. Schedule of Alternates: Listed on bid form, as applicable.

1.9 COORDINATION

A. Coordinate scheduling, submittals, and Work at the facility to ensure an efficient and orderly sequence and to facilitate the continued uninterrupted use of the Facility.

B. Request Utility interruptions at least 72 hours in advance. Note: utility interruptions must be approved.

1.10 FIELD ENGINEERING

A. Establish elevations, lines, and levels and certify that elevations and locations of the Work conform to the Contract Documents. Verify existing conditions.

B. Contractor shall field verify all measurements and quantities required for a complete installation.

1.11 PRECONSTRUCTION MEETINGS

A. Owner will schedule a pre-construction meeting after contract award for all affected parties.

1.12 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at pre-approved intervals.

B. Preside at meetings, record minutes, and distribute copies within two days to those affected by decisions made.

1.13 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial progress schedule in duplicate within five (5) calendar days after date of notice of award of project for Project Manager’s review.

B. Submit revised schedules with each Application for Payment, identifying changes since previous version. Indicate estimated percentage of completion for each item of Work at each submission.

1.14 SHOP DRAWINGS

A. Shop Drawings for Review: Submit to Project Manager/Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

B. Submit four copies for use by the owner plus the number of copies that Contractor requires. Electronic submittals may be acceptable with prior approval of the Project Manager and Engineer. Close Out documents shall include electronic and hard copies of all submittals.

1.15 QUALITY ASSURANCE - CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' written instructions.

C. Comply with specified standards as minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

D. Supply certification from manufacturer that the installed Work meets or exceeds all manufacturers' requirements.

1.16 EXAMINATION

A. Verify that existing site conditions and subsurfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

B. Verify that utility services are available, of the correct characteristics, and in the correct location.

1.17 PREPARATION

A. Prepare surfaces prior to applying next material installation.

1.18 TOLERANCES

A. Monitor fabrication and installation tolerance control of installed Products over suppliers, manufacturers, Products, site conditions, and workmanship, to produce acceptable Work. Do not permit tolerances to accumulate. Comply fully with manufacturers' tolerances.

1.19 REFERENCES

A. Conform to reference standards by date of issue current as of date of Contract Documents.

B. Should specified reference standard conflict with Contract Documents, request clarification from Project Manager before proceeding.

1.20 ELECTRICITY

A. Unless otherwise provided for, Contractor shall be allowed to utilize power from the facility in moderate amounts.

B. Provide power outlets for construction operations, branch wiring, distribution boxes, and flexible power cords as required.

1.21 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Provide and maintain temporary lighting for construction operations as may be required.

B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.

1.22 WATER SERVICE

A. Owner shall provide suitable potable water in moderate quantities without cost to the Contractor.

1.23 TEMPORARY SANITARY FACILITIES

A. Contractor shall use temporary sanitary facilities throughout the course of construction.

1.24 BARRIERS AND FENCING

A. Provide barriers and fencing as needed to prevent unauthorized entry to construction areas and to protect new facilities and adjacent properties from dust, debris and damage.

1.25 PROTECTION OF INSTALLED WORK

A. Protect installed Work and provide special protection where specified in individual specification sections. Prohibit traffic or storage upon grass or newly paved surfaces.

1.26 SECURITY

A. Provide security and facilities to protect Work and existing facilities from unauthorized entry, vandalism, or theft.

1.27 ACCESS ROADS & HAULING

A. Maintain temporary access routes through the public thoroughfare and parking areas to serve the construction area as required without obstructing traffic or blocking access for facility staff or participants. Provide drive pads as required.

B. Restore site to pre-construction condition. Fill ruts, replace broken or damaged

amenities, sod disturbed areas.

1.28 PARKING

A. Arrange for temporary parking areas to accommodate construction personnel on site. Do not block traffic.

1.29 PROGRESS CLEANING AND WASTE REMOVAL

A. Collect and maintain work areas free of waste materials, debris, and rubbish on a daily basis. Maintain site in a clean and orderly condition. Provide refuse containers and dispose of construction debris legally off site. The Owner may request load tickets from landfills permitted to accept construction debris.

1.30 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities and materials, prior to Substantial Completion review.

B. Clean and repair damage caused by installation or use of temporary work.

C. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

1.31 PRODUCTS

A. Products: Means new material, machinery, components, equipment, fixtures, and
systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work.

1.32 TRANSPORTATION, HANDLING, STORAGE AND PROTECTION

A. Transport, handle, store, and protect Products in accordance with manufacturers' instructions.

1.33 PRODUCT OPTIONS

A. Products Specified by Naming One Manufacturer or equal: Products of manufacturer named approved as "Basis of Design". Equal alternate products to be approved by Owner as Substitutions. Submit product data as required in SUBSTITUTIONS.

1.34 SUBSTITUTIONS

A. Architect/Engineer will consider requests for Substitutions only within 10 days after date established in Notice to Proceed. For Pre-Bid approved Substitutions, submit request 7 calendar days or more before bid date with all back up data to show that all characteristics of the Basis of Design product are met with the substituted product or material.

B. Document each request with complete backup data substantiating compliance of proposed Substitution with all characteristics of the materials specified in the Contract Documents.

C. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.

D. Substitution shall indicate all product properties and show that they are equal to that Specified.

E. Acceptance or Rejection of Pre-Bid Substitution Requests will be issued by Addendum.

1.35 FINAL CLEANING

A. Execute final cleaning prior to final inspection of work area. User may occupy portions of the work incrementally as the work is completed and accepted. Entire project to be ready for use by User once all areas of work are completed.

B. Clean debris from site and drainage systems.

C. Remove waste and surplus materials, rubbish, and construction facilities from the facility and the site. Leave site in raked and smooth condition.

1.36 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of Contract Documents to be utilized only for record documents.

B. Record actual revisions to the Work. Record information concurrent with construction progress.

C. Specifications: Legibly mark and record at each Product section a description of actual Products installed.

D. Record Documents and Shop Drawings: Legibly mark each item to record actual construction.

E. Submit documents to Project Manager with claim for final Application for Payment.

F. Submit 2 paper copies and 1 disc with pdf copies to include:
   a. As built drawings and specifications
   b. Approved submittals
   c. Warrantees and guarantees
   d. Certificate of Occupancy or Letter of Completion from Permitting Department or other agencies, as applicable.

1.37 WARRANTIES

A. Product and Manufacturer's Warranties shall be provided per specifications.

B. In addition, all materials and labor shall be warranted for a minimum of one year after Substantial Completion of the entire project. Contractor to promptly repair all deficiencies within that time. A warranty inspection shall be scheduled by the Owner, with the Contractor and Owner's representative, before the end of the warranty period, in order to review the work and note deficiencies for the Contractor to correct. Said meeting may be waived if no deficiencies are noted.

PART 2 PRODUCTS
Not Used.

PART 3 EXECUTION
Not Used.

END OF SECTION

SECTION 01220 UNIT PRICES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Measurement.
   2. Payment.

1.3 UNIT PRICES

A. Provide unit prices for items listed, for inclusion in Contract, guaranteed to apply for duration of Project as basis for additions to or deductions from Contract Sum.

B. Actual quantities and measurements supplied or placed in the Work will determine payment.

C. Payment includes full compensation for all required labor, Products, tools, equipment, services, and incidentals, and for erection, application, or installation of an item of the Work.

PART 2 PRODUCTS Not used

PART 3 EXECUTION

3.1 UNIT PRICE SCHEDULE

A. Provide and install one (1) cubic yard of concrete, per the specifications.
   1. Unit of measure: Per cubic yard.
   2. Basis of payment:
      a. Contract Sum to be based on quantities material provided and installed.
      b. Adjustments to Contract Sum will be made based on actual quantity of items provided to owner.

B. Provide and install one (1) cubic foot of asphalt, per the specifications.
   1. Unit of measure: Per cubic foot.
   2. Basis of payment:
      a. Contract Sum to be based on quantities material provided and installed.
      b. Adjustments to Contract Sum will be made based on actual quantity of items provided to owner.

C. Provide and install one pathway light, per the specifications.
   1. Unit of measure: Each.
   2. Basis of payment:
      a. Contract Sum to be based on quantities material provided and installed.
      b. Adjustments to Contract Sum will be made based on actual quantity of items provided to owner.

D. Provide and install one pole light, per the specifications.
   1. Unit of measure: Each.
   2. Basis of payment:
      a. Contract Sum to be based on quantities material provided and installed.
      b. Adjustments to Contract Sum will be made based on actual quantity of items provided to owner.

E. Provide and install one (1) square foot of paver, per the specifications.
   1. Unit of measure: Square foot.
   2. Basis of payment:
      a. Contract Sum to be based on quantities material provided and installed.
      b. Adjustments to Contract Sum will be made based on actual quantity of items provided to owner.

F. Provide and install one (1) square yard of sod, per the specifications.
   1. Unit of measure: Square Yard.
   2. Basis of payment:
      a. Contract Sum to be based on quantities material provided and installed.
      b. Adjustments to Contract Sum will be made based on actual quantity of items provided to owner.

G. Provide and install one (1) monument tree, per the specifications.
   1. Unit of measure: Each.
   2. Basis of payment:
      a. Contract Sum to be based on quantities material provided and installed.
      b. Adjustments to Contract Sum will be made based on actual quantity of items provided to owner.

END OF SECTION

SECTION 01230

ALTERNATIVE BID ITEMS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes
   1. Documentation of changes to Contract Sum and/or Contract Time.

B. Contract Documents contain pertinent requirements for materials and methods to accomplish work described herein.

C. Provide alternate costs for inclusion in Contract Sum if accepted by Owner.

1.3 RELATED REQUIREMENTS

A. Owner/Contractor Agreement: Alternates accepted by Owner for incorporation into the Work.

B. Individual specification sections identified.

1.4 PROCEDURES

A. Alternates will be exercised at the option of Owner.

B. Coordinate related work and modify surrounding work as required to complete the work, including changes under each Alternate, when acceptance is designated in Owner/Contractor Agreement.

1.5 DESCRIPTION OF DEDUCTIVE ALTERNATES

A. **Alternate #1:** Open Bay between Column line 1 and 2.
B. **Alternate #2:** Lobby Ceiling. Replace with already scheduled ACT.
C. **Alternate #3:** Remove all of the Tree Allowance
D. **Alternate #4:** All millwork with the exception of the Information Desk and break room. Windows along south side to receive opaque window film, pattern TBD.
E. **Alternate #5:** Remove Entry water feature and planters. Remove Allowance for water feature bubbler.
F. **Alternate #6:** Remove all site lighting north of the Building along the pathways and terraces. Remove all dedicated utility lines serving these lights. Site lighting in parking lot and entrance to remain.
G. **Alternate #7:** Remove the contemplation space from the site and all dedicated utility runs serving it.

PART 2 PRODUCTS Not used

PART 3 EXECUTION Not used

END OF SECTION

SECTION 01310 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General project coordination procedures.
2. Administrative and supervisory personnel.
3. Coordination drawings.
4. Requests for Information (RFIs).
5. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Sections:
1. Division 1 Section "Execution Requirements"
2. Division 1 Section "Project Record Drawings" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. RFI: Request from Owner, Architect, or Contractor seeking information from each other during construction.

1.4 COORDINATION

A. Contractor shall be responsible for coordinating all trades of his contract, Owners Contractors, coordinating construction sequences and schedules, and coordinating actual installed location and interface of work.

B. Contractor shall supervise and direct the development of coordination drawings showing comprehensive coordination and integration of all Work of this project

including, but not limited to, structural, architectural mechanical, plumbing, fire protection, electrical disciplines, and Owners Contractors.

C. Coordination drawings are intended to assist Contractor and all trades during construction and may be used to supplement shop drawings, record drawings, and other required submittals.

D. Coordination: Each contractor shall supervise and direct construction operations with those of subcontractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

E. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

F. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.
9. Project closeout activities.

1.5 KEY PERSONNEL

A. Key Personnel Names: Within 5 days of Notice to Proceed, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and email addresses. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Post copies of list at site. Keep list current at all times.

1.6 REQUESTS FOR INFORMATION (RFIs)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

1.7 PROJECT MEETINGS

A. General: Attendance of subcontractors and superintendent at a weekly progress meeting is required.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01310

SECTION 01320

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Start-up construction schedule.
2. Contractor's construction schedule.
3. Field condition reports.
4. Special reports.

1.3 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. PDF electronic file.

B. Start-up construction schedule.

1. Approval of cost-loaded start-up construction schedule will not constitute approval of schedule of values for cost-loaded activities.

C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

D. Field Condition Reports: Submit at time of discovery of differing conditions.

E. Special Reports: Submit at time of unusual event.

F. Existing Condition Photos: Submit prior to onsite mobilization to record existing conditions. If, during construction, damage occurs by others, notify Project Manager right away.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.

B. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Show the following:

1. Activity Duration
2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
3. Submittal Review Time: Include review and resubmittal times indicated in Division 1 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
4. Startup and Testing Time: Include not less than 15 days for startup and testing.
5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by phase.
2. Work Restrictions: Show the effect of the following items on the schedule:

    a. Coordination with existing construction.
    b. Limitations of continued occupancies.
    c. Uninterruptible services.
    d. Partial occupancy before Substantial Completion.
    e. Use of premises restrictions.
    f. Provisions for future construction.
    g. Seasonal variations.
    h. Environmental control.

D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.

E. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered RFIs.

3. Rejected or unreturned submittals.
4. Notations on returned submittals.

2.2 START-UP CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Submit start-up horizontal bar-chart-type construction schedule within seven days of date established for the Notice to Proceed .

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

A. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the start-up network diagram, prepare a skeleton network to identify probable critical paths.

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:

    a. Preparation and processing of submittals.
    b. Mobilization and demobilization.
    c. Purchase of materials.
    d. Delivery.
    e. Fabrication.
    f. Utility interruptions.
    g. Installation.
    h. Work by Owner that may affect or be affected by Contractor's activities.
    i. Testing and commissioning.
    j. Punch list and final completion.
    k. Activities occurring following final completion.

2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
3. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.

B. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall project schedule.

C. Initial Issue of Schedule: Identify critical activities. Prepare tabulated reports showing the following:

1. Contractor or subcontractor and the Work or activity.
2. Description of activity.

3. Principal events of activity.
4. Immediate preceding and succeeding activities.
5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.

D. Schedule Updating: Submit at each weekly coordination meeting.

1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
4. Changes in activity durations in workdays.
5. Changes in the critical path.
6. Changes in total float or slack time.
7. Changes in the Contract Time.

Note: The Contractor may be allowed additional construction days due to inclement conditions ("rain days") only as such are appropriately documented and are in excess of the NOAA/National Weather Service average (previous 5 years) for the given month. A "rain day" is defined as more than a "trace" (0.10") of rain falling within a given 24 hour period. The Contractor shall provide documentation and formally request any "rain days" they feel are legitimately due. Documentation shall be submitted to the Project Manager, in writing, within ten (10) calendar days of the rain event.

2.4 REPORTS

A. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.5 SPECIAL REPORTS

A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01330
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contact, including General and Supplementary Conditions and Division 01 Specification Section, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Submittal Procedure
   2. Submittal Schedule
   3. Shop Drawings
   4. Product Data
   5. Samples

1.3 SUBMITTAL PROCEDURES

A. Number each submittal with Project Manual specification Section number and sequential number within each section. Number resubmittals with original number and an alphabetic suffix.

B. Identify Project, Contractor, Subcontractor or supplier, pertinent Drawing sheet and detail numbers, and specification Section number, as appropriate.

C. Submit all submittals simultaneously for each Produce or Specification Section. Where multiple Products function as an assembly, group submittals for all related Products into single submittal.

D. Project Manager will not review incomplete submittals.

E. Apply Contractor's stamp, signed or initialed certifying that:

   1. Submittal was reviewed.
   2. Products, field dimensions, and adjacent construction have been verified.
   3. Information has been coordinated with requirements for Work and Contract Documents.

F. Schedule submittals to expedite the Project, and deliver to Project Manager. Coordinate submittal of related items.

G. For each submittal, allow 10 days for Project Manager's review, excluding delivery

time to and from Contractor. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of completed Work.

H. Revise and resubmit submittals when required; identify all changes made since previous submittals.

I. Distribute copies of reviewed submittals to concerned parties and to Project Record Documents file. Instruct parties to promptly report any inability to comply with provisions.

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1.4 SUBMITTAL SCHEDULE

A. Submit a submittal schedule showing all submittals proposed for project, including:
1. Submittals for Review
2. Closeout Submittals.

B. Include for each submittal:
1. Specification section number.
2. Description of submittal.
3. Type of submittal.
4. Anticipated submittal date.

C. Submit three (3) hard copies and one (1) PDF copy, concurrently.

1.5 SHOP DRAWINGS

A. Present information in clear and thorough manner.

B. Identify details by reference to sheet and detail numbers or areas shown on Drawings.

C. Reproductions of details contained in Contract Documents are not acceptable.

D. Submit three (3) hard copies and one (1) PDF copy (concurrently). One hard copy and a PDF copy will be returned to Contractor for printing and distribution.

1.6 PRODUCT DATA

A. Mark each copy to identify applicable products, models, options, and other data.

B. Supplement manufacturers' standard data to provide information unique to this

Project.

C. Submit 3 copies. Project Manager will return one copy to Contractor for printing and distribution.

1.7 SAMPLES

A. Submit samples to illustrate functional and aesthetic characteristics of Products, with integral parts and attachment of devices. Coordinate sample submittals for interfacing work.

B. Where so indicated, submit samples of finishes from the full range of manufacturers' standard colors, textures, and patterns for Project Manager's selection.

C. Include identification for each sample, with full Project information.

D. Project Manager will notify Contractor of approval or rejection of samples, or of selection of color, texture or pattern if full range is submitted.

END OF SECTION

SECTION 01400 – PRE-BID QUALIFICATIONS & CONSTRUCTION QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for general contractor/installer **pre-bid qualifications**.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated.

C. The City of Mobile is unable to issue payment or deposits on materials that are not on the project site, or in the City of Mobile stored in a climate controlled, bonded warehouse where a City representative can verify their presence and proper storage. Please refer to Construction Contract and General Conditions for more detail on payment procedures.

D. Contractor’s Quality Control Plan

1. Specific quality assurance, control and schedule requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

E. Related Sections:
1. Division 1 Section "Construction Progress Documentation" for developing a schedule of required tests, inspections, submittals, orders, and installation.

1.3 CONTRACTOR'S QUALITY-CONTROL PLAN FOR CONSTRUCTION

A. Quality-Control Plan, General: Submit quality-control plan and schedule within 2 days of Notice to Proceed. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, schedule and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities.

B. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process.

C. Testing and Inspection: Include in the quality-control plan a comprehensive schedule of Work requiring testing and inspection.

D. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.

1.4 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in this and other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.

12. Name and signature of laboratory inspector, manufacturer's technical representative, and/or factory authorized representative.
13. Recommendations on retesting and re-inspecting.

1.5 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

D. Preconstruction Testing: See individual sections for more information on tests required.

E. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged. See individual specification sections for more information on Mockups.

1. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

2. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.

3. Notify Architect 7 seven days in advance of dates and times when mockups will be constructed.

4. Demonstrate the proposed range of aesthetic effects and workmanship.

5. Obtain Architect's approval of mockups before starting work, fabrication, or construction.

6. Allow 7 seven days for initial review and each re-review of each mockup.

7. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01400

SECTION 01635
SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Sections:
   1. Divisions 2 through 16 Sections for specific requirements and limitations for substitutions and pre-bid approvals.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

   1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
   2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 SUBMITTALS

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced.

   1. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

      a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
      b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner

and separate contractors that will be necessary to accommodate proposed substitution.

c. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
d. 6”x12” Samples of each finish material in proposed pattern and color.
e. Certificates and qualification data.
f. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
g. Cost information, including a proposal of change, if any, in the Contract Sum (not applicable for pre-bid Submittals).
h. Impact of substitution on construction schedule.
i. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
j. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

2. Project Manager’s Action: If necessary, Project Manager will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Project Manager will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Project Manager Supplemental Instructions for minor changes in the Work.
b. Use product specified if Project Manager does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

A. Coordination: Modify or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01700
EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Environmental concerns.
2. Installation of the Work.
3. Cutting and patching.
4. Coordination of Owner-installed products.
5. Progress cleaning.
6. Starting and adjusting.
7. Protection of installed construction.
8. Correction of the Work.

B. Related Sections:
1. Division 1 Sections “Summary of the Work”, “Project Record Documents”, or "Closeout Procedures", if included in Project Manual, for submitting closeout documents and final cleaning.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.4 INFORMATIONAL SUBMITTALS

A. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:

1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.

3. Products: List products to be used for patching and firms or entities that will perform patching work.
4. Dates: Indicate when cutting and patching will be performed.
5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate how long services and systems will be disrupted. Prior approval of Utility outages is required. Notify Owner of intent at least 72 hours in advance.

1.5 QUALITY ASSURANCE

A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

B. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.6 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to the Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning work,

investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

   a. Description of the Work.
   b. List of detrimental conditions, including substrates.
   c. List of unacceptable installation tolerances.
   d. Recommended corrections.

2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to [**local utility**] [**Owner**] that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions

outside the control of the Contractor, submit a request for information to Architect according to requirements in Division 1 Section "Project Management and Coordination."

E. Surface and Substrate Preparation: Comply with manufacturer's recommendations for preparation of substrates to receive subsequent work.

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
3. Inform installers of lines and levels to which they must comply.
4. Check the location, level and plumb, of every major element as the Work progresses.
5. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect[**and Construction Manager**].

3.4 FIELD ENGINEERING

A. Identification: Owner will identify existing benchmarks, control points, and property corners.

B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

C. Benchmarks: Establish and maintain a minimum of [two] permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

3.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
4. Maintain minimum headroom clearance of 96 inches.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous, and meet environmental requirements.

3.6 CUTTING AND PATCHING

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

C. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. [Concrete] [and] [Masonry]: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

D. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.

3.7 OWNER-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for Owner's construction personnel.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.

1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.8 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

    a. Utilize containers intended for holding waste materials of type to be stored.

4. Coordinate progress cleaning for joint-use areas where more than one installer has worked.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.

2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

F. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.

G. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

H. Clean completed construction as frequently as necessary through the remainder of the construction period.

I. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.9 STARTING AND ADJUSTING

A. Coordinate startup and adjusting of equipment and operating components with requirements in other Division 2 -16 Sections."

B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Manufacturer's Field Service: Comply with qualification requirements in other Division 2-16 Sections.

3.10 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.11 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

3.12 ENVIRONMENTAL CONCERNS

1. Provide protection and conduct construction in ways that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

3.13 STORMWATER CONTROL AND DISCHARGE

1. Comply with City of Mobile and Alabama Department of Environmental Management requirements. Pay particular attention to Water Regulations and Allowable Discharges.

2. See City of Mobile Code, Chapter 17, Storm Water Management and Flood Control.

3. Obtain any necessary permits that may be required due to discharges.

END OF SECTION 01700

SECTION 01710
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at final completion.

1.4 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number.

    a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect’s signature for receipt of submittals.

5. Submit testing, adjusting, and balancing records.
6. Submit sustainable design submittals not previously submitted.
7. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
6. Advise Owner of changeover in utility services.
7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.

8. Complete final cleaning requirements.
9. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
2. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
3. Submit final completion photographic documentation.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
1. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
2. Include the following information at the top of each page:

a. Project name.
b. Date.
c. Name of Architect.
d. Name of Contractor.
e. Page number.

3. Submit list of incomplete items in the following format:

a. MS Excel electronic file. Architect will return annotated file.
b. PDF electronic file. Architect will return annotated file.

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

C. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

D. Warranties in Paper Form:

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

E. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

a. Clean Project site, and grounds, in areas disturbed by construction and delivery activities, of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Remove tools, construction equipment, machinery, and surplus material from Project site.
d. Clean interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
e. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
f. Sweep concrete floors broom clean in unoccupied spaces.
g. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
h. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-

obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.

i. Remove labels that are not permanent.
j. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
k. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
l. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
m. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.

n. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
o. Leave Project clean and ready for occupancy.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair, or remove and replace, defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

    a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION

SECTION 01731
CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes procedural requirements for cutting and patching.

B. Definition: Cutting and patching includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and repair required to restore surfaces to their original condition.

C. Operational Limitations: Do not cut and patch operating elements, safety related systems, or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements, safety related systems or related components in a manner that would result in increased maintenance or decreased operational life or safety.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Use materials identical to existing materials to the maximum extent available.

B. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

C. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.1 INSPECTION

A. Before cutting, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.

B. Before proceeding with cutting and patching involving two or more trades, meet at the Project site with the entities providing or affected by the cutting and patching. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.2 PREPARATION

A. Provide temporary support of work to be cut.

B. Protect existing conditions during cutting and patching to prevent damage.

C. Bypass in-service existing pipe, conduit, or ductwork scheduled to be removed or relocated before cutting.

3.3 PERFORMANCE

A. Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

B. Cutting: Cut existing construction using methods least likely to damage elements retained and adjoining construction. Where possible, review proposed procedures with the original installer and comply with the original installer's recommendations.

1. In general, use hand or small power tools designed for sawing or grinding, not for hammering and chopping.
2. Cut through concrete and masonry using a cutting machine, such as a Carborundum saw or a diamond-core drill.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
2. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3.4 CLEANING

A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items.

END OF SECTION 01731

SECTION 017823
OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
   1. Operation manuals for systems, subsystems, and equipment.
   2. Maintenance manuals for the care and maintenance of products, materials, and finishes, systems and equipment.

B. See Divisions 01 through 16 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.2 SUBMITTALS

A. Manual: Submit two copies of each manual in final form at least 15 days before final inspection. Architect will return copy with comments within 10 days after final inspection.

   1. Correct or modify each manual to comply with Architect's comments. Submit **2** copies of each corrected manual within 10 days of receipt of Architect's comments.

   2. Provide PDF copies on 2 discs. Submit with the corrected manual.

PART 2 - PRODUCTS

2.1 MANUALS, GENERAL

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain a title page, table of contents, and manual contents.

B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:

   1. Subject matter included in manual.
   2. Name and address of Project.
   3. Name and address of Owner.

4. Date of submittal.
5. Name, address, and telephone number of Contractor.
6. Name and address of Architect and Engineer.
7. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

   a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
4. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

   a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
   b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and equipment descriptions, operating standards, operating procedures, operating logs, wiring and control diagrams, and license requirements.

B. Descriptions: Include the following:

1. Product name and model number.

2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include start-up, break-in, and control procedures; stopping and normal shutdown instructions; routine, normal, seasonal, and weekend operating instructions; and required sequences for electric or electronic systems.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.3 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and inspection procedures, types of cleaning agents, methods of cleaning, schedule for cleaning and maintenance, and repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

2.4 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including maintenance instructions, drawings and diagrams for maintenance, nomenclature of parts and components, and recommended spare parts for each component part or piece of equipment:

D. Maintenance Procedures: Include test and inspection instructions, troubleshooting guide, disassembly instructions, and adjusting instructions, and demonstration and training videotape if available, that detail essential maintenance procedures.

E. Submit demonstration and training video for all lighting control systems.

F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

B. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

C. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

D. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

1. Do not use original Project Record Documents as part of operation and maintenance manuals.

E. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

SECTION 017839
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.

B. See Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.

C. See Divisions 01 through 16 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.2 SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit copies of Record Drawings as follows:
   a. Final Submittal: Submit two sets of marked-up Record Prints, showing all dimensional locations, materials changes, any changes via addendum or change order. Pay particular attention to noting underground utilities.

B. Record Specifications: Submit two copies of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit two copies of each Product Data submittal.

D. Submit PDF’s of Record Drawings, Record Specifications, Record Change Orders, Requests for Proposal, Documentation of use of Allowances, Product and Contractor’s Warrantees, Product Test Reports, Final Surveys, Record Product Data, etc on 2 discs.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

    a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    b. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Record Transparencies: Organize into unbound sets matching Record Prints. Place transparencies in durable tube-type drawing containers with end caps. Mark end cap of each container with identification. If container does not include a complete set, identify Drawings included.
3. Record CAD Drawings: Organize CAD information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each CAD file.
4. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Architect and Engineer.
    e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Completed Test Reports.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

END OF SECTION 017839

SECTION 02 25 23 – CONCRETE CURB AND SIDEWALKS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:
This item shall consist of furnishing all material, forms, labor and equipment and performing all work necessary for the construction of curb and sidewalks in accordance with the details, dimensions and typical cross section and to the lines and grades as shown on the contract drawings.

B. Related Work Specified Elsewhere:
1. Section 02200, Excavation and Backfill.
2. Section 033150, Concrete PART 2 - PRODUCTS

2.1 MATERIALS

A. Concrete: Curb and sidewalks shall comply with Section 03315 of these specifications.

B. Reinforcing Steel: Shall comply with Section 03315 of these specifications.

C. Expansion Joints: Premolded joint material for expansion joints shall meet the requirements of the following AASHTO specifications: M-58, M-59 or M-90.

PART 3 - EXECUTION

3.1 SUBGRADE PREPARATION

The subgrade shall be shaped and compacted at proper moisture content so that the top 6 inches of the subgrade shall have a density of not less than 95%, when tested in accordance with ASTM D 698 Method C including Note 2. All soft yielding material which will not compact satisfactorily shall be removed and replaced with 6-inches of subbase material.

3.2 SUBBASE MATERIAL

A. Place below sidewalks, properly wet and compact to the thickness shown.

B. Subbase material shall meet the gradation and requirement of Section 02221, Crushed Stone and Gravel.

3.3 FORMS

Metal forms and divider plates or templates between 10 foot sections shall be used in all cases, except that on curves of short radii, the ENGINEER may permit wooden forms for backing flexible material. On normal curves, the CONTRACTOR shall use flexible steel forms to avoid the effect of broken chords. A curb and gutter slip forming machine acceptable to the ENGINEER

may be used in lieu of conventional forms.

3.4 CONCRETE PLACEMENT

A. General: Comply with the requirements of Section 03315 for mixing and placing concrete, as specified.

B. For sidewalks, place concrete in one course, monolithic construction, for the full width and depth of walks.

3.5 JOINTS

A. General: Construct transverse joints at right angles to the Work centerline and as shown.

B. Contraction Joints:
1. Sidewalk: Width of walk (no farther than 8’ on center)
2. Curbs and Gutters: 6 feet on centers.

C. Construction Joints: Place joints at locations where placement operations are stopped for a period of more than 1/2-hour, except where such pours terminate at expansion joints.

D. Expansion Joints: Provide 1/2-inch expansion joint filler where Work abuts structures; at returns; at 36 foot spacing for straight runs or at spacing otherwise shown on the Drawings.

3.6 CONCRETE FINISHING

A. Smooth the exposed surface by screeding and floating.

B. Work edges of sidewalks and transverse joints; and round to 1/4-inch radius.

C. Complete surface finishing by drawing a fine-hair broom across the surface, perpendicular to line of traffic.

3.7 REINFORCEMENT

A. Reinforcing steel for curb and sidewalks shall be installed in accordance with the detail shown on the plans. Longitudinal bars may be supported by pins before placing concrete or they may be placed directly on a layer of concrete struck off at the proper elevation.

B. Bars shall not be disturbed or moved out of position by the concrete placing and spading operations. No reinforcing bars shall extend across expansion joints in curb and gutter construction.

3.8 PROTECTION AND CURING

Immediately after finishing the concrete, it shall be protected and cured in accordance with the provisions and requirements of Section 03315, Concrete.

3.9 BACKFILLING AND CLEANING UP

After the concrete has set sufficiently, the space on the sides of the curb shall be refilled to the required elevation with suitable material, which shall be tamped in layers of not over six inches until firm and solid.

END OF DOCUMENT 02 25 23

SECTION 02 32 00
GEOTECHNICAL INVESTIGATION

PART 1 - GENERAL

SCOPE

This section provides information resulting from subsurface investigations completed at the site as part of this project. This section may contain information applicable to ALL sitework, and other technical specification sections, as well. All Contractors are expected to review this information as part of their duties to familiarize themselves with the site.

Results of the geotechnical investigation apply only to the locations at which data was collected, at the specific time it was collected. Geotechnical conditions may differ elsewhere on the site.

Prior to making additional investigations of his own using test pits, borings, or other methods; Bidder shall first gain permission from property owner and Owner's Project Manager. Geotechnical investigations completed by Bidder shall comply with all applicable requirements of Division 01 through Division 33 of this project.

RELATED WORK

Applicable provisions of Division 01 govern work under this Section.

PART 2 - MATERIALS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 02 41 13
SELECTIVE SITE DEMOLITION

P A R T 1 - G E N E R A L

SCOPE

The work under this section shall consist of providing all work, materials, labor, equipment, and supervision necessary to provide for the demolition of site work and such features as required in these specifications and on the drawings. Included are the following topics:

PART 1 - GENERAL
- Scope
- Related Work
- Submittals
- Record Drawings
- Safety
- Permits
- Disconnection of Services
- Provisions for Future Work
- Removal/Salvaging of Items
- Owner Salvaged or Removed Materials
- References

PART 2 - MATERIALS
- Equipment

PART 3 - EXECUTION
- Protection of Existing Work and Facilities
- Demolition
- Demolition below Grade
- Demolition Backfill
- Transportation and Disposal of Demolition Waste

RELATED WORK

Applicable provisions of the General Conditions and Division 1 shall govern work under this section.

- Section 02 00 00 – Existing Conditions
- Section 31 25 00 – Erosion Control

SUBMITTALS

For utilities or other services requiring removal or abandonment in-place, submit materials documenting completion of such work.

Submit record drawings.

Submit copies of records documenting recycling or disposal of demolition materials from the site.

RECORD DRAWINGS

Maintain record drawings showing actual locations of utilities and other features encountered, and any deviations from the original design. Show actual limits of removal and demolition.

SAFETY

Verify that all gas and electrical utilities have been abandoned or disconnected and associated hazards mitigated, prior to beginning any demolition.

Maintain a clean and orderly site. Remove debris at end of each workday.

Burning of debris is not permitted.

If hazardous materials are not anticipated, but encountered, terminate operations and contact the OWNER'S Construction Representative immediately. Follow all applicable local, state and federal regulations pertaining to hazardous materials.

PERMITS

Contractor shall comply with all applicable federal, state, and local safety and health requirements regarding the demolition of structures and other site features as applicable. Unless otherwise noted, Contractor shall be responsible for obtaining and paying for all permits necessary to complete demolition work.

DISCONNECTION OF SERVICES

Prior to starting removal and/or demolition operations be responsible and coordinate disconnection of all existing utilities, communication systems, alarm systems and other services.

Disconnect all services in manner which insures continued operation in facilities not scheduled for demolition.

Disconnect all services in a manner which allows for future connection to that service.

Disconnect services to equipment at unions, flanges, valves, or fittings wherever possible.

PROVISIONS FOR FUTURE WORK

N/A

REFERENCES

Demolition and removal of sanitary sewer structures shall be in accordance with Mobile Area Water and Sewer System (MAWSS) requirements, specifically MAWSS Standard Specification Section 12.1.36 (Permanent Plugging and Abandoning Sewer Lines and Manholes) and related Sections.

REMOVAL/SALVAGING OF ITEMS

Carefully remove all items that are scheduled to be salvaged.

Secure salvaged items to allow for future movement; provide pallets, skids and other devices as necessary. Secure all loose parts.

Provide crates, padding, tarps and other measures necessary to protect salvaged items during storage. Store items in secure location, safe from vandalism, weather, dust and other adverse elements.

Where salvaged items are indicated to be turned over to Owner, deliver to location on property where designated by Owner. Where indicated to be incorporated into new work, store the salvaged item in secure location until trade responsible for re-installation mobilizes his equipment and storage facilities to the site, or otherwise accepts responsibility for the salvaged item.

OWNER SALVAGED OR REMOVED MATERIALS

SALVAGE ITEMS IN THIS PROJECT: Remove the existing gate at the driveway entrance and relocate as indicated in the construction plans.

P A R T 2 - M A T E R I A L S

EQUIPMENT

Contractor's equipment for demolition purposes must meet all safety requirements imposed on such equipment.

P A R T 3- E X E C U T I 0 N

GENERAL; PROTECTION OF EXISTING WORK AND FACILITIES

Contractor to request a utility location mark-out for the site and verify site conditions before proceeding with demolition work. Inspect structures and utilities prior to start of work and notify the Architect in writing of any discrepancies or hazardous conditions.

Take all measures necessary to safeguard all existing work and facilities which are outside the limits of the work.

Furnish and install fencing or other barriers as shown on the plans or as otherwise necessary to protect existing features.

Verify the locations of, and protect, any buildings, structures, paved surfaces, signs, streetlights, utilities, landscaping and all other such facilities that are intended to remain or be salvaged.

Make such explorations and probes as necessary to ascertain any required protection measures that shall be used before proceeding with demolition.

Provide and maintain adequate catch platforms, warning lights, barricades, guards, weather protection, dust protection, fences, planking, bracing, shoring, piling, signs, and other items required for proper protection. Provide protection for workmen, the public, adjacent construction, and occupants of existing building(s).

Report damage of any facilities or items scheduled for salvaging to the OWNER'S Construction Representative.

Repair or replace any damaged facilities that are not scheduled for demolition.

Explosives shall not be used for demolition.

Keep streets, walks and all other adjacent paved areas clean and swept clear of dirt, mud and debris deposited as a result of this operation.

Protect surrounding area from dust. Control rodents and other vermin associated with demolition operations.

DEMOLITION

Remove all equipment, fixtures and other materials scheduled for salvage prior to beginning demolition operations.

Demolish and remove all buildings and structures scheduled for demolition as shown on the plans.

Abandon utilities in accordance with Mobile Area Water and Sewer System (MAWSS) requirements.

Carry out vehicle loading as necessary within the project boundaries or as defined or indicated on the drawings, but not in locations that block vehicular traffic on the streets or pedestrian traffic on adjacent public walks.

Dismantle each structure in an orderly manner to provide complete stability of the structure at all times. Provide bracing and shoring where necessary to avoid premature collapse of structure.

Conduct demolition operations and the removal of rubbish and debris in such a way that a minimum of nuisance dust is caused. Constantly sprinkle rubbish and debris with water if necessary to keep nuisance dust to a minimum.

Where necessary to prevent collapse of any construction, install temporary shores, underpinning, struts or bracing. Do not commence demolition work until all temporary construction is complete.

Break up and remove concrete slabs-on-grade, unless otherwise shown to remain.

DEMOLITION BELOW GRADE

Demolish foundation walls and other below grade features in accordance with the plans. Unless otherwise noted, remove all below grade features to a point 4' below adjoining existing grade, or proposed grade, whichever is lower. Basement and/or lowest level floors more than 4' below existing grade need not be removed, but must be broken up to permit drainage.

DEMOLITION BACKFILL
Backfill and compact below grade areas and voids resulting from demolition of structures and other abandonment and demolition.

Backfilling shall not begin until demolition and abandonment has been approved and documented by the OWNER'S Construction Representative.

Prior to placement of fill materials, ensure that areas to be filled are free of standing water, frost, frozen materials, trash and debris.

Backfill type, lift thickness and compaction requirements shall be in accordance with Section 31 20 00 – Earthmoving.

TRANSPORTATION AND DISPOSAL OF DEMOLITION WASTE
Transport and dispose all demolition waste in accordance with local, state, and federal guidelines.

Whenever possible, or otherwise required by the Contract Documents, recycle demolition waste.

Demolition waste shall be disposed of at a landfill or dumpsite designed and approved to accept the given waste.

Maintain records documenting recycling and disposal of demolition waste. Record description of material, date removed, quantity removed, method of transport and recycling/disposal destination.

END OF SECTION

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

1.01 SCOPE OF WORK

A. Description of scope and intent
   1. CONTRACTOR shall provide all material, labor, and tools required to complete the installation of specified system.
   2. Any omission of reference to items required to complete the full operational and functional system specified in the section does not relieve the CONTRACTOR of the obligation to provide same.
   3. To provide installation of all items, including delivery, dispersing to the proper locations within the building, and affixing in place.
   4. Installation shall be accomplished by workers skilled in their craft that will perform their work in a professional manner and will leave the premises safe, orderly and clean.
   5. Drawings and general provisions of Contract, including General and Supplemental Conditions and Division 1 Specification Sections, apply to this Section.
   6. CONTRACTOR is responsible for coordination of work included in this specification with all other specification sections related to furnishing of all materials, labor, permits, fees and services necessary for completion of work in this section.

B. Section Includes:
   1. Formwork for cast in place concrete, with shoring, bracing, and anchorage.
   2. Formwork accessories.
   3. Form stripping.
   4. Reinforcing steel for cast in place concrete.
   5. Grout.
   6. Cast in place concrete, including concrete for the following:
      a. Foundations, footings.
      b. Slabs on grade.
      c. Supported slabs.
      d. Foundation and structural walls.
      e. Equipment pads and bases.
   7. Concrete curing.
   8. Shoring and reshoring.

1.02 REFERENCES

All referenced standards refer to the edition in force at the time these plans and Specifications are issued for bidding.

A. AASHTO M 182 Standard Specification for Burlap Cloth Made from Jute or Kenaf; American Association of State Highway and Transportation Officials.

B. ACI 117 Standard Tolerances for Concrete Construction and Materials; American Concrete Institute.

C. ACI 201.2R Guide to Durable Concrete; American Concrete Institute.

D. ACI 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute.

E. ACI 214 Recommended Practice for Evaluation of Compression Test Results of Field Concrete.

F. ACI 301 Specifications for Structural Concrete for Buildings; American Concrete Institute.

G. ACI 302.1R Guide for Concrete Floor and Slab Construction; American Concrete Institute.

H. ACI 304R Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute.

I. ACI 305R Hot Weather Concreting; American Concrete Institute.

J. ACI 306R Cold Weather Concreting; American Concrete Institute.

K. ACI 318 Building Code Requirements for Reinforced Concrete; American Concrete Institute.

L. ACI 347R Guide to Formwork for Concrete; American Concrete Institute.

M. ACI 350 Code Requirements for Environmental Engineering Concrete Structures.

N. ACI 350.1 Specification for Tightness Testing of Environmental Engineering Concrete Containment Structures & Commentary

O. ACI 372 Guide to Design and Construction of Circular Wire-and-Strand-Wrapped Prestressed Concrete Structures

P. ACI SP 66 ACI Detailing Manual; American Concrete Institute.

Q. ASTM A 185 Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.

R. ASTM A 615 Standard Specification for Deformed and Plain Billet Steel Bars for Concrete Reinforcement.

S. ASTM C 31 Standard Practice for Making and Curing Concrete Test Specimens in the Field.

T. ASTM C 33 Standard Specification for Concrete Aggregates.

U. ASTM C 39 Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

V. ASTM C 42 Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.

W. ASTM C 94 Standard Specification for Ready Mixed Concrete.

X. ASTM C 143 Standard Test Method for Slump of Hydraulic Cement Concrete.

Y. ASTM C 150 Standard Specification for Portland Cement.

Z. ASTM C 171 Standard Specifications for Sheet Materials for Curing Concrete.

AA. ASTM C 172 Standard Practice for Sampling Freshly Mixed Concrete.

BB. ASTM C 173 Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.

CC. ASTM C 231 Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.

DD. ASTM C 260 Standard Specifications for Air Entraining Admixtures for Concrete.

EE. ASTM C 494 Standard Specifications for Chemical Admixtures for Concrete.

FF. ASTM C 618 Standard Specifications for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.

GG. ASTM C 685 Standard Specifications for Concrete Made by Volumetric Batching and Continuous Mixing.

HH. ASTM C 881 Standard Specification for Epoxy Resin Base Bonding Systems for Concrete.

II. ASTM C 1059 Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete.

JJ. ASTM C 1107 Standard Specification for Packaged Dry, Hydraulic Cement Grout (Nonshrink).

KK. ASTM D 1751 Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

LL. ASTM D 1752 Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.

MM. ASTM E 154 Standard Test Methods for Water Vapor Retarders Used in Contact with Earth under Concrete Slabs, on Walls, or as Ground Cover.

NN. ASTM E 329 Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.

OO. CRSI Manual of Standard Practice; Concrete Reinforcing Steel Institute.

PP. Florida Building Code – FBC

1.03 DEFINITIONS

A. Unexposed Finish: A general use finish, with no appearance criteria, applicable to all formed concrete concealed from view after completion of construction.

B. Exposed Finish: A general use finish applicable to all formed concrete exposed to view except those indicated to receive textured finish and including surfaces which may receive a paint coating (if any).

1.04 SUBMITTALS

A. All submittals shall be submitted in accordance with Section 01300.

B. Product Data: Submit manufacturer's product data for the following:
1. Formwork accessories.
2. Form liners.
3. Concrete admixtures.
4. Grout.
5. Bonding compound.
6. Epoxy bonding system

C. Aggregates: Submit test reports showing compliance with specified quality and gradation.

D. Shop Drawings: Submit shop drawings for fabrication and placement of the following:
1. Reinforcement: Comply with ACI SP 66. Include bar schedules, diagrams of bent bars, arrangement of concrete reinforcement, and splices.
   a. Show construction joints.
   b. Include details of reinforcement at openings through concrete structures.
   c. Include elevations of reinforcement in walls.
   d. Show stirrup spacing.
   e. Concrete embedment’s.
2. Shoring and reshoring for elevated concrete placement shall include:
   a. Location, size, and type of all shoring members.
   b. Location, size, and type of all reshoring members.

c. Location, size, and type of all mud sills, blocking, temporary lateral bracing and other accessories necessary to safely support and brace the structure during construction.
d. Prepare shop drawings under seal of professional structural ENGINEER registered in the state of Florida.

E. Quality Control Submittals
1. Submit the following information related to quality assurance requirements specified:
2. Design data: Submit proposed mix designs and test data before concrete operations begin. Identify for each mix submitted the method by which proportions have been selected.
a. For mix designs based on trial mixtures, include trial mix proportions, test results, and graphical analysis and show required average compressive strength f(cr).
b. Indicate quantity of each ingredient per cubic yard of concrete.
c. Indicate type and quantity of admixtures proposed or required.
3. Test reports: Submit laboratory test reports for all testing specified.
4. Certifications: Submit affidavits from an independent testing agency certifying that all materials furnished under this section conform to specifications.
5. Certifications: Provide certification from manufacturers of concrete admixtures that chloride content complies with specified requirements.
6. Certifications: Submit mill test certificates for all reinforcing steel furnished under this section, showing physical and chemical analysis.
7. Placement schedule: Submit concrete placement schedule prior to start of any concrete placement operations. Include location of all joints indicated on drawings, plus anticipated construction joints.
8. Submit batch tickets complying with ASTM C 685 or delivery tickets complying with ASTM C 94, as applicable, for each load of concrete used in the work.
a. Include on the tickets the additional information specified in the ASTM document.
9. Cold weather concreting: Submit description of planned protective measures.
10. Hot weather concreting: Submit description of planned protective measures.
11. Mass Concrete: Submit description of planned protective measures.

1.05 QUALITY ASSURANCE

A. Codes and Standards: Comply with the following documents, except where requirements of the contract documents or of governing codes and governing authorities are more stringent:
1. ACI 301
2. ACI 318
3. ACI 350
4. CRSI Manual of Standard Practice.

B. Testing Agency Services:
1. Employ, at CONTRACTOR's expense, an independent testing agency acceptable to the ENGINEER to perform specified tests and other services required for quality assurance.

a. Testing agency shall meet ASTM E 329 requirements.

C. Source of Materials: Obtain materials of each type from same source for the entire project.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver reinforcement to project site bundled and tagged with metal tags indicating bar size, lengths, and other data corresponding to information shown on placement drawings.
1. Concrete reinforcement materials stored on the site shall be kept on concrete blocks and supported off the ground to prevent damage and accumulation of water, dirt, or rust.

B. Store cementitious materials in a dry, weather tight location. Maintain accurate records of shipment and use.

C. Store aggregates to permit free drainage and to avoid contamination with deleterious matter or other aggregates. When stockpiled on ground, discard bottom 6 inches of pile.

D. Handle aggregates to avoid segregation.

1.07 PROJECT CONDITIONS

A. Cold Weather Concreting: Comply fully with the recommendations of ACI 306.
1. Well in advance of proposed concreting operations, advise the ENGINEER of planned protective measures including but not limited to heating of materials, heated enclosures, and insulating blankets.

B. Hot Weather Concreting: Comply fully with the recommendations of ACI 05R.
1. Well in advance of proposed concreting operations, advise the ENGINEER of planned protective measures including but not limited to cooling of materials before or during mixing, placement during evening to dawn hours, fogging during finishing and curing, shading, and windbreaks.

C. Mass Concrete: Comply fully with the recommendations of ACI 207.1R.
1. Well in advance of proposed concreting operations, advise the ENGINEER of planned protective measures including but not limited to cooling of materials before or during mixing, placement, curing, forms, height of lifts (max 8ft), and monitoring.

PART 2- PRODUCTS

2.01 FORMWORK

A. Facing Materials:
1. Unexposed finish concrete: Any standard form materials that produce structurally sound concrete.
2. Exposed finish concrete: Materials selected to offer optimum smooth, stain

free final appearance and minimum number of joints. Provide materials with sufficient strength to resist hydrostatic head without bow or deflection in excess of allowable tolerances.

3. Textured finish concrete: Materials or linings as indicated on the drawings, or as required to match ENGINEER's control sample.

B. Formwork Accessories:
   1. Form coating: Form release agent that will not adversely affect concrete surfaces or prevent subsequent application of concrete coatings.
   2. Metal ties: Commercially manufactured types; cone snap ties, taper removable bolt, or other type which will leave no metal closer than 1-1/2 inches from surface of concrete when forms are removed, leaving not more than a 1 inch diameter hole in concrete surface.
   3. Fillets: Wood or plastic fillets for chamfered corners, in maximum lengths possible.

2.02 REINFORCING MATERIALS

A. Reinforcing Bars: Provide deformed bars complying with the following, except where otherwise indicated:
   1. ASTM A 615, Grade 60.

B. Welded Wire Fabric: ASTM A 185, cold drawn steel, plain.

C. Reinforcing Accessories:
   1. Tie wire: Black annealed type, 16-1/2 gage or heavier.
   2. Supports: Bar supports conforming to specifications of CRSI "Manual of Standard Practice."
      a. Class 1 (plastic protected) at all formed surfaces which will be exposed to weather.
      b. Class 1 (plastic protected) or Class 2 (stainless steel protected) at all formed surfaces which will be exposed to view but not to weather.
      c. Precast concrete blocks of strength equal to or greater than specified strength of concrete or Class 3 supports equipped with sand plates, where concrete will be cast against earth. Concrete masonry units will not be accepted.

2.03 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, and as follows:
   1. Type I, except where other type is specifically permitted or required.
   2. Type II shall be used for moderate sulfate resistance conditions, retaining walls and exposed concrete not included in Type V below and when hot weather concreting is required.
   3. Type III shall be used for high early strength and when cold weather concreting is required.
   4. Type IV shall be used for low heat of hydration when mass concreting is required.
   5. Type V shall be used for high sulfate resistance conditions, all environmental and all water or wastewater liquid retaining structures (includes all wet well

surfaces). (An alternate Type V cement mixture shall be a Type I/II. The CONTRACTOR shall submit the Type I/II cement for review, concrete mix design where the Type I/II was utilized and 30 concrete break test results of where the Type I/II cement was implemented).

B. Fly Ash: ASTM C 618, Type C or F.

C. Water: Potable.

D. Aggregates:
1. Normal weight concrete: ASTM C 33.
   a. Class 5M.
   b. Gradation as specified below under mix design.

E. Admixtures General: Admixtures which result in more than 0.1 percent of soluble chloride ions by weight of cement are prohibited.

F. Air Entraining Admixture: ASTM C 260 and certified by manufacturer for compatibility with other mix components.
1. Products: The following products, provided they comply with requirements of the contract documents, will be among those considered acceptable:
   a. “Air Mix"; The Euclid Chemical Company.
   b. “Sika Aer"; Sika Corporation.
   c. “Micro Air"; Master Builders, Inc.
   d. “Darex AEA"; W. R. Grace & Co.

G. Water Reducing, Retarding Admixture: ASTM C 494, Type D.
1. Products: The following products, provided they comply with requirements of the contract documents, will be among those considered acceptable:
   a. “Pozzolith Retarder"; Master Builders, Inc.
   b. “Eucon Retarder 75"; The Euclid Chemical Company.
   c. “Daratard 17"; W. R. Grace & Co.
   d. “PSI R Plus"; Cormix Construction Chemicals.
   e. “Plastiment"; Sika Corporation.
   f. “Protard”; Master Builders, Inc. (former Conchem product).

H. Water Reducing and Accelerating Admixtures: ASTM C 494, Type E.
1. Products: The following products, provided they comply with requirements of the contract documents, will be among those considered acceptable:
   a. “Accelguard 80"; The Euclid Chemical Company.
   b. “Pozzutec 20"; Master Builders, Inc.
   c. “Gilco Accelerator"; Cormix Construction Chemicals.

I. High Range Water Reducing Admixture (Superplasticizer): ASTM C 494, Type F or G.
1. Products: The following products, provided they comply with requirements of the contract documents, will be among those considered acceptable:
   a. “WRDA 19" or "Daracem 100"; W. R. Grace & Co.
   b. “PSP Superplasticizer"; Master Builders, Inc. (former Conchem product).

c. “Sikament 300"; Sika Corporation.
d. “Eucon 37"; The Euclid Chemical Company.
e. “PSI Super”; Cormix Construction Chemicals.
f. “Rheobuild"; Master Builders, Inc.

2.04 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. Vapor Retarder: Membrane for installation beneath building slabs on grade, resistant to decay when tested in accordance with ASTM E 154, and as follows:
1. Polyethylene sheet, not less than 8 mils thick.

B. Nonshrink Grout: ASTM C 1107.
1. Minimum 4000 psi grout compressive strength
2. Type: Provide nonmetallic type only.
3. Products: The following products, provided they comply with requirements of the contract documents, will be among those considered acceptable:
a. Nonmetallic type:
1) “Masterflow 928"; Master Builders, Inc.
2) “Sonogrout 14k"; Sonneborn Building Products Division ChemRex, Inc.
3) “Euco N S Grout"; The Euclid Chemical Company.
4) “Supreme"; Cormix Construction Chemicals.
5) “Five Star Grout"; Five Star Products, Inc.

C. Burlap: AASHTO M 182, Class 2 jute or kenaf cloth.

D. Moisture Retaining Cover: ASTM C 171, and as follows:
1. Curing paper.
2. Plyethylene film.
3. White burlap polyethylene sheeting.

E. Bonding Compound: Non redispersable acrylic bonding admixture, ASTM C 1059, Type II.
1. Products: The following products, provided they comply with requirements of the contract documents, will be among those considered acceptable:
a. “Everbond"; L & M Construction Chemicals, Inc.
b. “Flex Con"; The Euclid Chemical Company.

F. Epoxy Bonding Systems: Epoxy adhesive for bonding fresh concrete to hardened concrete and for grouting wall pipes, bolts and reinforcing dowels. ASTM C 881; type, grade, and class as required for project conditions.
1. Products: The following products, provided they comply with requirements of the contract documents, will be among those considered acceptable:
a. “Concresive LPL"; Master Builders, Inc.
b. “Sikadur 32 Hi Mod"; Sika Corporation.
c. “Euco #452 Epoxy System"; The Euclid Chemical Company.
d. “Sikastix 390”.
e. “EucoEpoxy 461”.
f. “Five Star Epoxy Grout”.
g. “Sikstix 370”.

h. "EucoEpocy 463".

G. Expansion Joint Filler
1. Expansion Joint Filler shall be performed non-extruding and resilient type meeting the Specifications of ASTM D1751, or D1752, unless otherwise specified.
2. All expansion joints in base slabs on grade other than hydraulic structures shall be fiber expansion joints of required slab depth meeting the requirement of ASTM D1751, Type I and AASHTO M213. Exposed joints shall be sealed as specified below.
3. All expansion joints in hydraulic structures shall be ¾ inch sponge rubber expansion joints of required wall thickness meeting the requirements of ASTM D1752, Type I and AASHTO M153, Type I. Joints shall be sealed on both sides as specified below.
   a. Nonextruding bituminous type: ASTM D 1751.
   b. Sponge rubber type: ASTM D 1752, Type I.

H. Expansion Joint Sealer
1. Joint sealants for hydraulic structures shall be one of the following, or approved equal:
   a. "CM-60" two-part gray tone, as manufactured by W. R. Meadows, Inc., applied over a backer rod sized for the joint. Underwater primer shall be used on all joints subject to immersion. Standard "CM-60" primer shall be applied to all other joints. Sealant depth shall be one-half the width of the joint.
   b. The sealant shall be a two-part, polyurethane sealant "Eucolastic I" by the Euclid Chemical Company or "Sikaflex 1a" by Sika Chemical Company. Joint width should be 4 times the expected joint movement, but not less than ¼ inch. All joints shall be primed with "Eucolastic Primer" by the Euclid Chemical Company or "Sikaflex 429" by Sika Chemical Company.

I. PVC Waterstops
Waterstops: Made of Polyvinyl Chloride (PVC) and of subzero grade, Plastigrip, Type W-6 as manufactured by Progress Unlimited, Inc. or approved equivalent.
1. Minimum 4" x 3/16" or as specified on the drawings.
2. Produced from a compound, the base resin of which shall be virgin PVC.
3. Minimum Properties:
   a. 2000 psi minimum tensile strength, ASTM D412-51T
   b. 350% minimum elongation, ASTM D412-51T
   c. -35 degrees F minimum low temperature brittleness, ASTM D746-57T
   d. 65-75 shore 'A' durometer hardness, ASTM D676-59T
   e. 0.15 maximum water absorption, ASTM D570-59T
4. Field Splicing:
   a. Butt splices shall be fused welded using a thermostatically controlled Teflon PVC Waterstop iron at the Manufacturer's recommended temperature
   b. Lapping, gluing or use of adhesives shall not be permitted.
   c. Provide factory made waterstop fabrications for all changes of directions, intersections, and transitions leaving only butt joint splicing

for the field.

5. Center waterstop in the joint and secure in correct position.
6. Use ribbed center bulb for all moving joints. Use dumbbell for all non-movement joints.
7. Always place the center bulb in the center of the expansion joint. Do not embed the center bulb in concrete.
8. Vibrate concrete around waterstops thoroughly to prevent honeycombing and to ensure contact between concrete and waterstop.

2.05 CONCRETE MIX DESIGN

A. Review: Do not begin concrete operations until proposed mix has been reviewed by the ENGINEER.

B. Proportioning of Normal Weight Concrete: Comply with recommendations of ACI 211.1.

C. Required Average Strength: Establish the required average strength f(cr) of the design mix on the basis of trial mixtures as specified in ACI 301, and proportion mixes accordingly. Employ an independent testing agency acceptable to the ENGINEER for preparing and reporting proposed mix design.

D. Proportion normal-weight concrete mix to produce an average strength at 28 day as follows unless otherwise indicated on the drawings:
   1. Columns, beams, walls, footings and slabs: 4000 psi
   2. Masonry Filled Grout: 3000 psi
   3. Prestressed Elements: 5000 psi

E. Fly Ash:
   1. The CONTRACTOR may elect to replace a portion of the Portland cement with fly ash up to a maximum of 25 percent by weight of cement plus fly ash.

F. Admixtures:
   1. Air entraining admixture: Add at rate to achieve specified air content.
      a. Do not use in slabs on grade scheduled to receive topping, unless manufacturer of topping recommends use over air entrained concrete.
   2. Water reducing and retarding admixture: Add as required in concrete mixes to be placed at ambient temperatures above 90 degrees F.
   3. Water reducing and accelerating admixture: Add as required in concrete mixes to be placed at ambient temperatures below 50 degrees F.
   4. High range water reducing admixture (superplasticizer): Add as required for placement and workability.
   5. Do not use admixtures not specified or approved.

G. Design mix to meet or exceed each requirement specified. Where more than one criterion is specified, the most stringent shall apply. For example, a minimum cement content or maximum water cement ratio might result in strengths greater than the minimum specified; likewise, a greater cement content or lower water cement ratio may be required in order to achieve the required strength.
   1. Specified compressive strength f'(c) (ASTM C 39): As noted

2. Maximum water cement ratio by weight:
   a. 0.4 for concrete toppings subject to traffic
   b. 0.45 for all other concrete
3. Maximum slump: As recommended in ACI 211.1. and ACI 350 as applicable.
4. Gradation of coarse aggregate: ASTM C 33 standard gradation with maximum nominal size of 3/4 inches.
5. Total air content (ASTM C 173 or ASTM C 231): 5 percent.

H. Mix Adjustments: Provided that no additional expense to OWNER is involved, CONTRACTOR may submit for ENGINEER's approval requests for adjustment to approved concrete mixes when circumstances such as changed project conditions, weather, or unfavorable test results occur. Include laboratory test data substantiating specified properties with mix adjustment requests.

2.06 CONTROL OF MIX IN THE FIELD

A. Slump: A tolerance of up to 1 inch above that specified will be permitted for 1 batch in 5 consecutive batches tested. Concrete of lower slump than that specified may be used, provided proper placing and consolidation is obtained.
   1. If slump upon arrival at the site is lower than 1 inch below the value specified, one addition of water in accordance with ASTM C 94 will be permitted to bring slump within tolerance, provided that:
      a. A positive means is available to measure the amount of water added at the site.
      b. The specified (or approved) maximum water cement ratio is not exceeded.
      c. Not more than 45 minutes have elapsed since batching.

B. Total Air Content: A tolerance of plus or minus 1 1/2 percent of that specified will be allowed for field measurements.

C. Do not use batches that exceed tolerances.

2.07 CONCRETE MIXING

A. On Site Equipment: Mix concrete materials in appropriate drum type batch machine mixer, in compliance with ASTM C 685. Mix each batch minimum of 1 1/2 minutes and maximum of 5 minutes before discharging concrete. Clean thoroughly at end of day and before changing concrete type.

B. Transit Mixers: Mix concrete materials in transit mixers, complying with requirements of ASTM C 94.
   1. At ambient temperatures of 85 to 90 degrees F, reduce mixing and delivery time to 75 minutes.
   2. At ambient temperatures above 90 degrees F, reduce mixing and delivery time to 60 minutes.

PART 3- EXECUTION

3.01 CONCRETE FORM PREPARATION

A. General: Comply with requirements of ACI 301 for formwork, and as herein specified. The CONTRACTOR is responsible for design, ENGINEER, and construction of formwork, and for its timely removal.

B. Earth Forms: Hand trim bottoms and sides of earth forms to profiles indicated on the drawings. Remove loose dirt before placing concrete.

C. Design: Design and fabricate forms for easy removal, without impact, shock, or damage to concrete surfaces or other portions of the work. Design to support all applied loads until concrete is adequately cured, within allowable tolerances and deflection limits.

D. Construction: Construct and brace formwork to accurately achieve end results required by contract documents, with all elements properly located and free of distortion. Provide for necessary openings, inserts, anchorages, and other features shown or otherwise required.
   1. Joints: Minimize form joints and make watertight to prevent leakage of concrete.
      a. Align joints symmetrically at exposed conditions.
   2. Chamfers: Provide chamfered edges and corners at exposed locations, unless specifically indicated otherwise on the drawings.
   3. Permanent openings: Provide openings to accommodate work of other trades, sized and located accurately. Securely support items built into forms; provide additional bracing at openings and discontinuities in formwork.
   4. Temporary openings: Provide temporary openings for cleaning and inspection in most inconspicuous locations at base of forms, closed with tight fitting panels designed to minimize appearance of joints in finished concrete work.

E. Tolerances for Formed Surfaces: Comply with minimum tolerances established in ACI 117, unless more stringent requirements are indicated on the drawings.

F. Release Agent: Provide either form materials with factory applied non-absorptive liner or field applied form coating. If field applied coating is employed, thoroughly clean and recondition formwork and reapply coating before each use. Rust on form surfaces is unacceptable.

3.02 VAPOR RETARDER INSTALLATION

A. General: Place vapor retarder sheet over prepared base material, aligning longer dimension parallel to direction of pour and lapped 6 inches. Seal joints with appropriate tape.

3.03 PLACING REINFORCEMENT

A. General: Comply with requirements of ACI 301 and as herein specified.

B. Preparation: Clean reinforcement of loose rust and mill scale, soil, and other materials which adversely affect bond with concrete.

C. Placement: Place reinforcement to achieve not less than minimum concrete coverages required for protection. Accurately position, support, and secure reinforcement against displacement. Provide Class C tension lap splices complying with ACI 318 unless otherwise indicated. Do not field bend partially embedded bars unless otherwise indicated or approved.
   1. Use approved bar supports and tie wire, as required. Set wire ties to avoid contact with or penetration of exposed concrete surfaces. Tack welding of reinforcing is not permitted.
   2. Wire fabric: Install in maximum lengths possible, lapping adjoining pieces not less than one full mesh. Offset end laps to prevent continuous laps in either direction, and splice laps with tie wire.

D. Welding: Welding of reinforcement is not permitted.

3.04 JOINT CONSTRUCTION

A. Construction Joints: Locate and install construction joints as indicated on drawings. If construction joints are not indicated, locate in manner which will not impair strength and will have least impact on appearance, as acceptable to the ENGINEER. Construction joints in retaining walls and walls of concrete tanks or structures subject to hydrostatic pressure shall be intentionally roughened to a full amplitude of approximately ¼ inch.
   1. Keyways: Provide keyways not less than 1 1/2 inches deep.
   2. Reinforcement: Continue reinforcement across and perpendicular to construction joints, unless details specifically indicate otherwise.

B. Isolation Joints: Construct isolation joints in slabs poured on grade at points of contact with vertical components, such as foundation walls and column pedestals. Install expansion joint filler to full concrete depth. Recess top edge of filler 1/8 inch where joints are unsealed.

C. Expansion Joints: Construct expansion joints where indicated. Install expansion joint filler to full depth of concrete. Recess edge of filler to depth indicated to receive joint sealant and backer rod as specified herein and detailed on drawings.

D. Control Joints: Construct contraction joints in building slabs poured on grade to form panels of sizes indicated on drawings, but not more than 20 feet apart in either direction.
   1. Saw cuts: Form control joints by means of saw cuts one fourth the depth of the slab, performed as soon as possible after slab finishing without dislodging aggregate.

3.05 INSTALLATION OF EMBEDDED ITEMS

A. General: Set anchorage devices and other items required for other work connected to or supported by cast in place concrete, using templates, setting drawings, and instructions from suppliers of items to be embedded.

1. Edge Forms and Screeds: Set edge forms and intermediate screeds as necessary to achieve final elevations indicated for finished slab surfaces.

3.06 WATERSTOPS

A. Waterstops shall be provided at all joints to seal off leakage of liquid from or into concrete tanks or structures subject to hydrostatic pressures. The type of waterstops used shall be as shown on the Drawings and as specified herein. The CONTRACTOR shall submit to the ENGINEER for approval the proposed procedure and schedule of concrete placing operations along with a detailed layout of the waterstop materials required showing sizes, lengths and types of joints.

B. Where required for proper location of waterstops, whether shown on the Drawings or not, starter walls of up to 1-1/2 inches in height and monolithic with slabs shall be provided at all wall construction joints. Reinforcing steel shall not be depressed at waterstops but shall have only the amount of concrete covering shown or specified. Starter walls as specified shall be required whether shown on the Drawings or not, unless specified concrete cover over reinforcing steel is 3 inches or greater.

3.07 CONCRETE PLACEMENT

A. Preparation: Provide materials necessary to ensure adequate protection of concrete during inclement weather before beginning installation of concrete.

B. Inspection: Before beginning concrete placement, inspect formwork, reinforcing steel, and items to be embedded, verifying that all such work has been completed.
   1. Wood forms: Moisten immediately before placing concrete in locations where form coatings are not used.

C. Placement General: Comply with requirements of ACI 304 and as follows:
   1. Concreting should be carried on at such a rate that the concrete is at all times plastic and flows readily into spaces between reinforcement.
   2. Schedule continuous placement of concrete to prevent the formation of cold joints.
   3. Provide construction joints if concrete for a particular element or component cannot be placed in a continuous operation.
   4. Deposit concrete as close as possible to its final location, to avoid segregation.
   5. Concrete shall be worked around reinforcement and embedded fixtures and into corners of forms.
   6. The following shall be prohibited from use:
      a. Partially hardened concrete.
      b. Contaminated concrete.
      c. Re-tempered concrete.
      d. Re-mixed concrete after initial set has occurred.

D. Placement in Forms: Limit horizontal layers to depths which can be properly consolidated, but in no event greater than 24 inches.
   1. Consolidate concrete by means of mechanical vibrators, inserted vertically in

freshly placed concrete in a systematic pattern at close intervals. Penetrate previously placed concrete to ensure that separate concrete layers are knitted together.
2. Vibrate concrete sufficiently to achieve consistent consolidation without segregation of coarse aggregates.
3. Do not use vibrators to move concrete laterally.

E. Slab Placement: Schedule continuous placement and consolidation of concrete within planned construction joints.
1. Thoroughly consolidate concrete without displacing reinforcement or embedded items, using internal vibrators, vibrating screeds, roller pipe screeds, or other means acceptable to ENGINEER.
2. Strike off and level concrete slab surfaces, using highway straightedges, darbies, or bull floats before bleed water can collect on surface. Do not work concrete further until finishing operations are commenced.

F. Cold Weather Placement: Comply with recommendations of ACI 306 when air temperatures are expected to drop below 40 degrees F either during concrete placement operations or before concrete has cured.
1. Do not use frozen or ice laden materials.
2. Do not place concrete on frozen substrates.

G. Hot Weather Placement: Comply with recommendations of ACI 305R when ambient temperature before, during, or after concrete placement is expected to exceed 90 degrees F or when combinations of high air temperature, low relative humidity, and wind speed are such that the rate of evaporation from freshly poured concrete would otherwise exceed 0.2 pounds per square foot per hour.
1. Do not add water to approved concrete mixes under hot weather conditions.
2. Provide mixing water at lowest feasible temperature and provide adequate protection of poured concrete to reduce rate of evaporation.
3. Use fog nozzle to cool formwork and reinforcing steel immediately prior to placing concrete.

H. Mass Concrete Placement: Comply with recommendations of ACI 207.1R when any volume of concrete with dimensions large enough to require that measures be taken to cope with generation of heat from hydration of the cement and attendant volume change to minimize cracking.
1. When the minimum dimension of the concrete exceeds 36 inches and the ratio of volume of concrete to the surface area is greater than 12 inches, provide for mass concrete.
2. Lifts shall not exceed 8ft.

3.08 FINISHING FORMED SURFACES

A. Repairs, General: Repair surface defects, including tie holes, immediately after removing formwork.
1. Remove honeycombed areas and other defective concrete down to sound concrete, cutting perpendicular to surface or slightly undercutting. Dampen patch location and area immediately surrounding it prior to applying bonding compound or patching mortar.

2. Before bonding compound has dried, apply patching mixture matching original concrete in materials and mix except for omission of coarse aggregate, and using a blend of white and normal Portland cement as necessary to achieve color match. Consolidate thoroughly and strike off slightly higher than surrounding surface.

B. Textured Form Finish: Repair tie holes and patch defective areas to match pattern created by form construction or form liners.

C. Unexposed Form Finish: Repair tie holes and patch defective areas. Rub down or chip off fins or other raised areas exceeding ¼-inch height.

D. Exposed Form Finish: Repair and patch defective areas, with fins or other projections completely removed and smoothed.
1. Smooth rubbed finish: Apply to surfaces indicated no later than 24 hours after form removal.
   a. Wet concrete surfaces to be finished and rub with Carborundum brick or other abrasive until uniform color and texture are achieved.
   b. Do not apply separate grout mixture.
2. Contiguous unformed surfaces: Strike smooth and float to a similar texture tops of walls, horizontal offsets, and other unformed surfaces adjacent to or contiguous with formed surfaces. Continue final finish of formed surfaces across unformed surfaces, unless otherwise specifically indicated.

3.09 FINISHING SLABS

A. Finishing Operations
1. Do not directly apply water to slab surface or dust with cement.
2. Use hand or powered equipment only as recommended in ACI 302.1R.
3. Screeding: Strike off to required grade and within surface tolerances indicated. Verify conformance to surface tolerances. Correct deficiencies while concrete is still plastic.
4. Bull Floating: Immediately following screeding, bull float or darby before bleed water appears to eliminate ridges, fill in voids, and embed coarse aggregate. Recheck and correct surface tolerances.
5. Do not perform subsequent finishing until excess moisture or bleed water has disappeared and concrete will support either foot pressure with less than ¼-inch indentation or weight of power floats without damaging flatness.
6. Final floating: Float to embed coarse aggregate, to eliminate ridges, to compact concrete, to consolidate mortar at surface, and to achieve uniform, sandy texture. Recheck and correct surface tolerances.

B. Coordinate appearance and texture of required final finishes with the ENGINEER before application.
1. Apply final finishes in the locations indicated on the drawings.

C. Float Finish: As specified above.

D. Broomed Float Finish: After floating and when water sheen has practically disappeared, apply uniform transverse corrugations approximately 1/16-inch deep, without tearing surface.

E. Slab Surface Tolerances:
1. Achieve flat, level planes except where grades are indicated. Slope uniformly to drains.
2. Floated finishes: Depressions between high spots shall not exceed 5/16 inch under a 10-foot straightedge.

F. Repair of Slab Surfaces: Test slab surfaces for smoothness and to verify surface plane to tolerance specified. Repair defects as follows:
1. High areas: Correct by grinding after concrete has cured for not less than 14 days.
2. Low areas: Immediately after completion of surface finishing operations, cut out low areas and replace with fresh concrete. Finish repaired areas to blend with adjacent concrete. Proprietary patching compounds may be used when approved by the ENGINEER.
3. Crazed or cracked areas: Cut out defective areas, except random cracks and single holes not exceeding 1 inch in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts. Dampen exposed concrete and apply bonding compound. Mix, place, compact, and finish patching concrete to match adjacent concrete.
4. Isolated cracks and holes: Groove top of cracks and cut out holes not over 1 inch in diameter. Dampen cleaned concrete surfaces and apply bonding compound; place dry pack or proprietary repair compound acceptable to ENGINEER while bonding compound is still active:
a. Dry pack mix: One part Portland cement to 2-1/2 parts fine aggregate and enough water as required for handling and placing.
b. Install patching mixture and consolidate thoroughly, striking off level with and matching surrounding surface. Do not allow patched areas to dry out prematurely.

3.10 CONCRETE CURING AND PROTECTION

A. General
1. Prevent premature drying of freshly placed concrete and protect from excessively cold or hot temperatures until concrete has cured.
2. Provide curing of concrete by one of the methods listed and as appropriate to service conditions and type of applied finish in each case.

B. Curing Period
1. Not less than 7 days for standard cements and mixes.
2. Not less than 4 days for high early strength concrete using Type III cement.

C. Curing Temperature
1. Concrete shall be maintained above 50 degrees F and in moist condition during the entire curing period.

D. Formed Surfaces: Cure formed concrete surfaces by moist curing with forms in place for full curing period.
   1. Keep wooden or metal forms moist when exposed to heat of the sun.
   2. If forms are removed prior to completion of curing process, continue curing by one of the applicable methods specified.

E. Surfaces Not in Contact with Forms
   1. Start initial curing as soon as free water has disappeared, but before surface is dry.
   2. Keep continuously moist for not less than 3 days by uninterrupted use of any of the following:
      a. Water ponding.
      b. Water saturated sand.
      c. Water fog spray.
      d. Saturated burlap: Provide 4-inch minimum overlap at joints.
   3. Begin final curing procedures immediately following initial curing and before concrete has dried.
      a. Moisture retaining cover: Lap not less than 3-inches at edges and ends, and seal with waterproof tape or adhesive. Repair holes or tears during curing period with same tape or adhesive. Maintain covering in intimate contact with concrete surface. Secure to avoid displacement.
         1) Extend covering past slab edges at least twice the thickness of slab.
         2) Do not use plastic sheeting on surfaces which will be exposed to view when in service.
         3) Continue final curing to end of curing period.

F. Avoid rapid drying at end of curing period.

G. During and following curing period, protect concrete from temperature changes of adjacent air in excess of 5 degrees F per hour and 50 degrees F per 24 hours. Progressively adjust protective measures to provide uniform temperature changes over entire concrete surface.

3.11 SHORES AND SUPPORTS

A. General: Comply with recommendations of ACI 347 for shoring and reshoring in multistory construction.

B. Low Rise Construction: Extend shoring from ground to roof for structures 4 stories or less in height.

C. Reshoring: Remove shores and reshore in a planned sequence, to avoid damage to partly cured concrete. Locate and provide adequate reshoring to safely support work without excessive stress or deflection.

D. Provide as a package, shoring and reshoring drawings prepared by or under the direct supervision of a specialty ENGINEER registered in the State of Florida.

3.12 REMOVAL OF FORMS AND SUPPORTS

A. Non Load Bearing Formwork: Provided that concrete has hardened sufficiently that it will not be damaged, forms not actually supporting weight of concrete or weight of soffit forms may be removed after concrete has cured at not less than 50 degrees F for 24 hours. Maintain curing and protection operations after form removal.

B. Load Bearing Formwork: Do not remove shoring and forms supporting weight of concrete, such as beam soffits, joists, slabs, and other structural elements, until concrete has attained at least the specified compressive strength f'(c) and until the CONTRACTOR has determined that the actual compressive strength attained is adequate to support the weight of the concrete and superimposed loads.

C. Keep reshores in place a minimum of 15 days after placing upper tier, and longer if required, until concrete has attained at least the specified compressive strength f'(c) and until the CONTRACTOR has determined that the actual compressive strength attained is adequate to support the weight of the concrete and superimposed loads.

D. Keep supports in place until heavy loads due to construction operations have been removed.

E. Test field cured specimens to determine potential compressive strength of concrete for specific locations.

3.13 MISCELLANEOUS CONCRETE ITEMS

A. Fill in: Fill in holes and openings left in concrete structures for passage of work by other trades after such work is in place. Place such fill in concrete to blend with existing construction, using same mix and curing methods.

B. Equipment Bases and Foundations: Provide machine and equipment bases and foundations, as indicated on Drawings. Set anchor bolts at correct elevations, complying with diagrams or templates of equipment manufacturer.
   1. Grout base plates and foundations as indicated with non-shrink grout.
   2. Use nonmetallic grout for exposed conditions, unless otherwise indicated.
   3. Equipment bases shall be sized to provide a minimum of 1.5” between the edge of the equipment bases and the edge of the equipment being served.
   4. Provide conduit windows through equipment bases of electrical equipment sized no larger than the conduit windows of the equipment being served.
   5. Equipment bases for electrical equipment shall be a minimum of 4” thick with chamfered edges.

C. Reinforced Masonry: Provide concrete grout for reinforced masonry where indicated on Drawings and as scheduled.

3.14 CONCRETE REPAIRS

A. General: Repairs due to poor workmanship shall be made by the CONTRACTOR at the CONTRACTOR's expense and shall be approved by the ENGINEER prior to repair procedure being implicated.

B. Perform cosmetic repairs of concrete surfaces as specified under concrete application.

C. Perform structural repairs with prior approval of the ENGINEER for method and procedure, using epoxy bonding systems. The ENGINEER's approval is required for repair methods using materials other than those specified.

3.15 QUALITY CONTROL TESTING DURING CONSTRUCTION

A. Refer to Section 01410 for additional concrete testing requirements for the project.

B. Composite Sampling and Making and Curing of Specimens: ASTM C 172 and ASTM C 31.
   1. Take samples at point of discharge.
   2. For pumped concrete, perform sampling and testing at the frequencies specified herein at point of delivery to pump, and perform additional sampling and testing at the same frequency at discharge from line.
   3. Results obtained at discharge from line shall be used for acceptance of concrete.

C. Slump: ASTM C 143. One test per strength test and additional tests if concrete consistency changes.
   1. Modify sampling to comply with ASTM C 94.

D. Air Content of Normal Weight Concrete: ASTM C 173 or ASTM C 231. One test per strength test performed on air entrained concrete.

E. Concrete Temperature:
   1. Test hourly when air temperature is 40 degrees F or below.
   2. Test hourly when air temperature is 90 degrees F or above.
   3. Test each time a set of strength test specimens is made.

F. Compressive Strength Tests: ASTM C 39.
   1. Compression test specimens: Mold and cure one set of 4 standard cylinders for each compressive strength test required.
   2. Testing for acceptance of potential strength of as delivered concrete:
      a. Obtain samples on a statistically sound, random basis.
      b. Minimum frequency:
         1) One set per 100 cubic yards or fraction thereof for each day's pour of each concrete class.
         2) One set per 3500 square feet of slab or wall area or fraction thereof for each day's pour of each concrete class.
         3) When the above testing frequency would provide fewer than 5 strength tests for a given class of concrete during the project,

conduct testing from not less than 5 randomly selected batches, or from each batch if fewer than 5.

c. Test one specimen per set at 7 days for information unless an earlier age is required.
d. Test 2 specimens per set for acceptance of strength potential; test at 28 days unless other age is specified. The test result shall be the average of the two specimens. If one specimen shows evidence of improper sampling, molding, or testing, the test result shall be the result of the remaining specimen; if both show such evidence, discard the test result and inform the ENGINEER.
e. Retain one specimen from each set for later testing, if required.
f. Strength potential of as delivered concrete will be considered acceptable if all of the following criteria are met:
   1) No individual test result falls below specified compressive strength by more than 500 psi.
   2) Average of any 3 consecutive strength test results equals or exceeds specified compressive strength f'c.
   3) Testing for evaluation of field curing:
      a) Frequency: 1 field set of specimens per strength acceptance test.
      b) Mold specimens from same sample used for strength acceptance tests. Field cure, and test at same age as for strength acceptance tests.
      c) Evaluate construction and curing procedures and implement corrective action when strength results for field cured specimens are less than 85 percent of test values for companion laboratory cured specimens.

3. Removal of forms or supports: Mold additional specimens and field cure with concrete represented; test to determine strength of concrete at proposed time of form or support removal.

G. Test Results: Testing agency shall report test results in writing to ENGINEER and CONTRACTOR within 24 hours of test.
1. Test reports shall contain the following data:
   a. Project name, number, and other identification.
   b. Name of concrete testing agency.
   c. Date and time of sampling.
   d. Concrete type and class.
   e. Location of concrete batch in the completed work.
   f. All information required by respective ASTM test methods.
2. Nondestructive testing devices such as impact hammer or sonoscope may be used at ENGINEER's option for assistance in determining probable concrete strength at various locations or for selecting areas to be cored, but such tests shall not be the sole basis for acceptance or rejection.
3. The testing agency shall make additional tests of in place concrete as directed by the ENGINEER when test results indicate that specified strength and other concrete characteristics have not been attained.
   a. Testing agency may conduct tests of cored cylinders complying with ASTM C 42, or tests as directed.
   b. Cost of additional testing shall be borne by the CONTRACTOR when

unacceptable concrete has been verified.

H. Water Tightness of Water Containing Walls

1. All basins, tanks, manholes, storm drainage structures, and wet wells are hydraulic structures and shall be watertight. Water tightness testing shall be conducted prior to any application of coatings or painting systems to the tank, basin, manhole, or wet well as per Sections 09900 and 13216. Each structure shall be filled with water, full depth (above maximum water level), prior to backfilling (unless otherwise noted) and kept full of water for 48 hours prior to starting the tightness testing. After 48-hours the level in the tank shall be measured and the testing period shall begin and conducted over a 24-hour period. The CONTRACTOR shall exercise every precaution to secure water tightness by careful mixing and placing of the concrete to obtain a homogeneous mixture at maximum density, without air pockets or voids, using the minimum practical amount of water in the mix. Extreme care shall be used to secure continuity of water stops at expansion and construction joints, to seal off holes from wall ties, and when placing concrete about wall sleeves, wall pipes and other obstructions. The CONTRACTOR shall fix all leaks.
2. The CONTRACTOR shall furnish, at his own expense, any pumps, piping, and appurtenances to provide the test water for the water tightness testing and any water post-loading operations of structures.
3. All structures shall be watertight.

END OF SECTION 03300

SECTION 04 06 50

MASONRY MORTAR AND GROUT

PART 1 GENERAL

1.1 SUMMARY

A. Section includes mortar and grout for masonry.

B. Related Sections:
1. Section 042113 – Brick Veneer Masonry

1.2 REFERENCES

A. ASTM International:
1. ASTM C91 - Standard Specification for Masonry Cement.
2. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic Cement Concrete.
3. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.
4. ASTM C150 - Standard Specification for Portland Cement.
5. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes.
6. ASTM C270 - Standard Specification for Mortar for Unit Masonry.
7. ASTM C387 - Standard Specification for Packaged, Dry, Combined Materials for Mortar and Concrete.
8. ASTM C404 - Standard Specification for Aggregates for Masonry Grout.
9. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
10. ASTM C1019 - Standard Test Method for Sampling and Testing Grout.
11. ASTM C1142 - Standard Specification for Extended Life Mortar for Unit Masonry.
12. ASTM C1329 - Standard Specification for Mortar Cement.
13. ASTM C1357 - Standard Test Method for Evaluating Masonry Bond Strength.

B. The Masonry Society:
1. TMS MSJC - Building Code for Masonry Structures (ACI 530/ASCE 5/TMS 402), Specification for Masonry Structures (ACI 530.1/ASCE 6/TMS 602) and Commentaries.

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal requirements.

B. Samples: Submit two samples of mortar, illustrating mortar color and color range.

C. Design Data: Submit design mix when Property specification of ASTM C270 is to be used, required environmental conditions, and admixture limitations.

D. Test Reports:
1. Submit reports on mortar indicating conformance of component mortar materials to requirements of ASTM C270 and test and evaluation reports to ASTM C780 for aggregate ratio and water content, air content, consistency and compressive strength.
2. Submit reports on grout indicating conformance of component grout materials to requirements of ASTM C476 and test and evaluation reports to ASTM C1019.

E. Manufacturer's Installation Instructions: Submit premix mortar manufacturer's installation instructions.

F. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with TMS MSJC Code and TMS MSJC Specification.

B. Maintain one copy of each document on site.

C. Mortar and its constituent materials shall conform to the proportions specified in ASTM C 270 as specified herein. Upon request by the architect, owner or owner’s representative, proportion tests in accordance with ASTM C 780, Annex 4 may be required to verify proportions. Please note that ASTM C 270 is a laboratory test procedure only and is specifically not to be used to determine mortar strengths or other properties through field-testing.
1. Mortar cement shall conform to ASTM C1329.
2. Lime shall be hydrated lime, Type S, conforming to ASTM C207.
3. Sand (aggregate) shall conform to ASTM C144. If the only available sand (aggregate) fails the gradation limits specified in ASTM C144, Section 4, Grading, sub-sections 4.1 and 4.2, it may be used provided the mortar can be prepared to comply with the aggregate ratio, water retention, and compressive strength requirements of the property specifications of ASTM C270. Use sand from the same source deposit throughout the entire project to promote color uniformity.
4. Water shall be clean, potable and free of deleterious material.
5. Accelerating compounds such as antifreeze, calcium chloride or other salts shall not be added to the mortar except by written approval of the architect.
6. Upon request by the architect, owner or owner’s representative the installer may be asked to construct a project site mock-up using the products, construction methods, tooling, colors, textures, pattern, joint size and proposed workmanship. If requested, obtain acceptance of the mock-up by the requesting authority before proceeding on construction of the project. Cleaning of mock-ups shall not occur prior to 3 days after construction. Mock-ups shall cure a minimum of 7 days prior to acceptance.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Section 016000 - Product Requirements.

B. Hot and Cold Weather Requirements: TMS MSJC Specification.

PART 2 PRODUCTS

2.1 MORTAR AND MASONRY GROUT

A. Manufacturers:
1. Argos
a. Basis of Design Approved Products:
1) Magnolia® Masonry Cement Types N, S and M
2) Magnolia® Eaglebond® Portland Lime Types O, N, S, and M
3) Magnolia® Superbond™ Mortar Cement Type S
4) Argos Portland Cement Types I, II, II MH, I/II, I/II MH and III
5) Argos White Portland Cement Type I
6) Argos Masonry Cement Types N, S or M
7) Argos Mortar Cement Types N, S, or M
8) Argos White Masonry Cement Types N or S
2. Blue Circle Cement
3. Citadel Cement
4. Mortamix
5. Substitutions: Section 01600 - Product Requirements

2.2 COMPONENTS

A. Portland Cement: ASTM C150, Type I, gray color.

B. Mortar Aggregate: ASTM C144, standard masonry type.

C. Hydrated Lime: ASTM C207, Type N.

D. Grout Aggregate: ASTM C404, fine.

E. Water: Clean and potable.

F. Mortar Color: Mineral oxide pigment; color as selected.

G. Calcium chloride is not permitted.

2.3 MIXES

A. Mortar Mixes:
1. Mortar For Non-Structural Masonry: ASTM C270, Type N using property specification.
2. Pointing Mortar: ASTM C270, Type N using property specification.
3. Stain Resistant Pointing Mortar: One part Portland cement, 1/8 part hydrated lime, and two parts graded (80 mesh) aggregate, proportioned by volume. Add aluminum tristearate, calcium stearate, or ammonium stearate equal to 2 percent of Portland cement by weight.

B. Mortar Mixing:
1. Thoroughly mix mortar ingredients in accordance with ASTM C270 in quantities needed for immediate use.
2. Achieve uniformly damp sand immediately before mixing process.
3. Add mortar color to achieve uniformity of mix and coloration.
4. Re-temper only within two hours of mixing.

C. Grout Mixes:
1. Grout for Structural Masonry: 2,000 psi strength at 28 days; 8-11 inches slump; mixed in accordance with ASTM C476 Fine grout.
2. Application:
a. Coarse Grout: For grouting spaces with minimum 4 inches dimension in every direction.
b. Fine Grout: For grouting other spaces.

D. Grout Mixing:
1. Mix grout in accordance with ASTM C94, modified to use ingredients complying with ASTM C476.
2. Add admixtures; mix uniformly.

PART 3 EXECUTION

3.1 MANUFACTURERS INSTRUCTIONS

A. Comply with the manufacturer’s product data including technical bulletins and installation instructions.

3.2 EXAMINATION

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

B. Request inspection of spaces to be grouted.

3.3 INSTALLATION

A. Install mortar and grout in accordance with TMS MSJC Specification and manufacturer instructions.

B. Use one bag masonry cement to 2 ¼ to 3 cubic feet of damp, loose masonry sand in a mechanical batch mixer. First add approximately 2/3 the water required, ½ the sand and 1 bag masonry cement. Then add the rest of the sand and water to bring the mix to the desired workability. Mortar should be mixed a minimum of 5 minutes after all the material have been charged into the mixture. The use of a one cubic foot box to measure sand will insure batch-to-batch uniformity.

C. Cleaning of color mortar with muriatic acid or proprietary cleaners containing acid is strictly prohibited. Use water with mild detergents only. All products used must be in compliance with the recommendations of both the mortar and brick manufacturers.

D. The type of joint, as well as when struck, has an effect on the color of color masonry. Joints should not be struck until the mortar is “thumb print hard.” Tooling mortar joints before they are “thumb print hard” will result in a significantly lighter joint color. All color masonry joints of the same color will be struck using the same type of joint (concave if not specified elsewhere on drawings) and at a similar time from placement. Joint type can affect water permeability of the assembly as well as the color.

3.4 FIELD QUALITY CONTROL

A. Section 016000 – Product Requirements: Quality Requirements and Testing and Inspection Services.

B. Establishing Mortar Mix: In accordance with ASTM C270.

C. Testing of Grout Mix: In accordance with ASTM C1019 for compressive strength and in accordance with ASTM C143/C143M for slump.

D. Test flexural bond strength of mortar and masonry units to ASTM C1357; test in conjunction with masonry unit sections specified.

E. Test compressive strength of mortar and masonry to ASTM C1314; test in accordance with masonry unit sections specified.

3.5 SCHEDULES

A. Exterior Brick Veneer Walls: Type N Mortar.
1. Color: As selected by Architect.

END OF SECTION 04 06 50

SECTION 04 21 13 – BRICK VENEER MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Clay face brick.
2. Steel reinforcing bars.
3. Masonry-joint reinforcement.
4. Ties and anchors.
5. Embedded flashing.
6. Miscellaneous masonry accessories.

B. Products Installed but not Furnished under This Section:
1. Steel lintels in unit masonry.
2. Steel shelf angles for supporting unit masonry.
3. Cavity wall insulation.
4. Mortar

C. Related Requirements:

1. Section 072100 "Thermal Insulation" for cavity wall insulation.
2. Section 076200 "Sheet Metal Flashing and Trim" for sheet metal flashing and for furnishing manufactured reglets installed in masonry joints.

1.3 ALLOWANCES

A. Face brick is part of the Face Brick Allowance.

1.4 DEFINITIONS

A. CMU(s): Concrete masonry unit(s).

B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.5 PREINSTALLATION MEETINGS

A. Pre-installation Conference: Conduct conference at Project site.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For the following:

1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
2. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevations of reinforced walls.
3. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.

C. Samples for Verification: For each type and color of the following:
1. Clay face brick, in the form of straps of five or more bricks.
2. Special brick shapes.
3. Color mortar
4. Weep holes and cavity vents.
5. Accessories embedded in masonry.

D. Qualification Data: For testing agency.

E. Material Certificates: For each type and size of the following:

1. Masonry units.

a. Include material test reports substantiating compliance with requirements.
b. For brick, include size-variation data verifying that actual range of sizes falls within specified tolerances.
c. For exposed brick, include test report for efflorescence according to ASTM C 67.
d. For surface-coated brick, include test report for durability of surface appearance after 50 cycles of freezing and thawing according to ASTM C 67.
e. For masonry units, include data and calculations establishing average net-area compressive strength of units.

2. Integral water repellent used in CMUs.
3. Cementitious materials. Include name of manufacturer, brand name, and type.
4. Mortar admixtures.
5. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
6. Grout mixes. Include description of type and proportions of ingredients.
7. Reinforcing bars.
8. Joint reinforcement.
9. Anchors, ties, and metal accessories.

F. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91/C 91M for air content.
2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.

G. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to TMS 602/ACI 530.1/ASCE 6.

H. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.7 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM C 1093 for testing indicated.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
1. Build mockups for typical exterior and interior walls in sizes approximately 48 inches long by 36 inches high by full thickness, including face and backup wythes and accessories.
    a. Include a sealant-filled joint at least 16 inches long in exterior wall mockup.
    b. Include through-wall flashing installed for a 24-inch length in corner of exterior wall mockup approximately 16 inches down from top of mockup, with a 12-inch length of flashing left exposed to view (omit masonry above half of flashing).
    c. Include veneer anchors, flashing, cavity drainage material], and weep holes in exterior masonry-veneer wall mockup.
2. Where masonry is to match existing, erect mockups adjacent and parallel to existing surface.
3. Clean exposed faces of mockups with masonry cleaner as indicated.
4. Protect accepted mockups from the elements with weather-resistant membrane.
5. Approval of mockups is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; and aesthetic qualities of workmanship.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.

E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.9 FIELD CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches down both sides of walls, and hold cover securely in place.
2. Where one wythe of multi-wythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe, and hold cover in place.

B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.

C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
2. Protect sills, ledges, and projections from mortar droppings.
3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.

E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

2.1 MANUFACTURERS

A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

2.2 UNIT MASONRY, GENERAL

A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.

B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.

C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.

1. Where fire-resistance-rated construction is indicated, units shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

2.3 CONCRETE MASONRY UNITS

A. See 042200 Reinforced Unit Masonry

2.4 CONCRETE AND MASONRYLINTELS

A. General: Provide one of the following:

B. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs matching adjacent CMUs in color, texture, and density classification, with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.5 BRICK

A. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units:

1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
2. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes, and lintels.
3. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.
4. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.

B. Clay Face Brick: Facing brick complying with ASTM C 216, Grade SW, Type FBX or FBS

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 3350 psi.
2. Initial Rate of Absorption: Less than 30 g/30 sq. in. per minute when tested according to ASTM C 67.
3. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated "not effloresced."
4. Size (Actual Dimensions): 3-1/2 to 3-5/8” inches wide by 2-1/4 inches high by 7-1/2 to 7-5/8” inches long.
5. Application: Use where brick is exposed unless otherwise indicated.
6. Color and Texture: **ACME Brick MENAWA (Basis of Design)**

2.6 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150/C 150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

1. Alkali content shall not be more than 0.1 percent when tested according to ASTM C 114.

B. Hydrated Lime: ASTM C 207, Type S.

C. Masonry Cement: ASTM C 91/C 91M.

D. Mortar Cement: ASTM C 1329/C 1329M.

E. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979/C 979M. Use only pigments with a record of satisfactory performance in masonry mortar.

F. Aggregate for Mortar: ASTM C 144.
1. White-Mortar Aggregates: Natural white sand or crushed white stone.
2. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

G. Aggregate for Grout: ASTM C 404.

H. Water: Clean and Potable.

I. Products: Subject to compliance with requirements, provide one of the following:

1. Colored and Non-colored Masonry Cement:

a. Magnolia Masonry Cement; Argos
b. Rainbow Mortamix Custom Color Masonry Cement; Holnam, Inc.
c. Centurion Colorbond; Lafarge Corporation.
d. Flamingo Color Masonry Cement; Riverton Corporation (The).

2. Mortar Pigments:

a. True Tone Mortar Colors; Davis Colors.
b. Centurion Pigments; Lafarge Corporation.
c. SGS Mortar Colors; Solomon Grind-Chem Services, Inc.

3. Cold-Weather Admixture:

a. Accelguard 80; Euclid Chemical Co.
b. Morseled; W. R. Grace & Co., Construction Products Division.
c. Trimix-NCA; Sonneborn, Div. of ChemRex, Inc

2.7 REINFORCEMENT

A. Uncoated-Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60.

B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Hohmann & Barnard, Inc; #RB or #RB-Twin Rebar Positioner or a comparable product by one of the following:

a. Blok-Lok
b. Dur-O-Wal; a Hohmann & Barnard company.
c. RKL Building Specialties.

C. Masonry-Joint Reinforcement, General: ASTM A 951/A 951M.

1. Hot-dip galvanized carbon steel for interior and exterior walls
2. Wire Size for Side Rods: 0.148-inch diameter.
3. Wire Size for Cross Rods: 0.148-inch diameter.
4. Wire Size for Veneer Ties: 0.148-inch diameter.
5. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
6. Provide in lengths of not less than 10 feet with prefabricated corner and tee units.

D. Masonry-Joint Reinforcement for Single-Wythe Masonry: Ladder type with single pair of side rods.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Hohmann & Barnard, Inc.; 220 Ladder-Mesh Joint Reinforcing or comparable product by one of the following:

    a. Blok-Lok.
    b. RKL Building Specialties.

E. Masonry-Joint Reinforcement for Multi-wythe Masonry:
1. Adjustable (two-piece) type, either ladder design, with one side rod at each face shell of backing wythe and with separate adjustable ties with pintle-and-eye connections having a maximum horizontal play of 1/16 inch (1.5 mm) and maximum vertical adjustment of 1-1/4 inches (32 mm). Size ties to extend at least halfway through facing wythe but with at least 5/8-inch (16-mm) cover on outside face. Ties have hooks or clips to engage a continuous horizontal wire in the facing wythe.

    a. Basis-of-Design Product: Subject to compliance with requirements, provide Hohmann & Barnard, Inc.; 270 Ladder LOX_ALL adjustable eye wire with 2X Pintles or comparable product by one of the following:

        1) Blok-Lok.
        2) RKL Building Specialties.

F. Masonry-Joint Reinforcement for Veneers Anchored with Seismic Masonry-Veneer Anchors: Single 0.187-inch diameter, hot-dip galvanized carbon steel continuous wire.

2.8 TIES AND ANCHORS

A. General: Ties and anchors shall extend at least 1-1/2 inches into veneer but with at least a 5/8-inch cover on outside face.

B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M, with ASTM A 153/A 153M, Class B-2 coating.
2. Stainless-Steel Wire: ASTM A 580/A 580M, Type 304.
3. Galvanized-Steel Sheet: ASTM A 653/A 653M, Commercial Steel, G60 (Z180) zinc coating.
4. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.
5. Stainless-Steel Sheet: ASTM A 240/A 240M or ASTM A 666, [**Type 304**] [**Type 316**].
6. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
7. Stainless-Steel Bars: ASTM A 276 or ASTM A 666, Type 304.

C. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch-diameter, hot-dip galvanized steel or stainless-steel wire.

a. Basis-of-Design Product: subject to compliance with requirements, provide Hohmann & Barnard, Inc.; #359 Weld on Tie or a comparable product by one of the following:

1) Blok-Lok.
2) RKL Building Specialties.

2. Tie Section: Triangular-shaped wire tie made from 0.187-inch-diameter, hot-dip galvanized steel or stainless-steel wire.

a. Basis-of-Design Product: subject to compliance with requirements, provide Hohmann & Barnard, Inc.; #301 Column Web Tie or a comparable product by one of the following:

1) Blok-Lok.
2) RKL Building Specialties.

D. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Connector Section: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.060-inch thick steel sheet, galvanized after fabrication.

2. Tie Section: Triangular-shaped wire tie made from 0.187-inch diameter, hot-dip galvanized steel wire.

E. Rigid Anchors: Fabricate from steel bars 1-1/4 inches wide by minimum 12 ga. thick by length as required for the embedded portion notched and corrugated to resist pull out and bent to engage the column when masonry is perpendicular to the flange.

a. Basis-of-Design Product: subject to compliance with requirements, provide Hohmann & Barnard, Inc.; #357 Beam Anchor or a comparable product by one of the following:

1) Blok-Lok.
2) RKL Building Specialties.

2. Corrosion Protection: Hot-dip galvanized to comply with ASTM A 153/A 153M

F. Adjustable Masonry-Veneer Anchors:

1. General: Provide anchors that allow vertical adjustment but resist a 100-lbf (445-N) load in both tension and compression perpendicular to plane of wall without deforming or developing play in excess of 1/16 inch (1.5 mm).
2. Fabricate sheet metal anchor sections and other sheet metal parts from [0.075-inch- thick steel sheet, galvanized after fabrication] [0.105-inch-thick steel sheet, galvanized after fabrication
3. Fabricate wire ties from [0.187-inch- diameter, hot-dip galvanized-steel wire unless otherwise indicated.

4. Contractor's Option: Unless otherwise indicated, provide any of the adjustable masonry-veneer anchors specified.

5. Seismic Masonry-Veneer Anchors: Connector section and a sheet metal anchor section, 1-1/4 inches wide by 6 inches long, with screw holes top and bottom; with screw tracks bent to form pronged legs of length to match thickness of insulation or sheathing; and raised rib-stiffened strap, 5/8 inch wide by 6 inches long, stamped into center to provide a slot between strap and base for inserting connector section. Self-adhering, modified bituminous gasket fits behind anchor plate and extends beyond pronged legs. Connector section consists of a triangular wire tie and rigid PVC extrusion with snap-in grooves for inserting continuous wire. Fabricate wire connector sections from [0.187-inch-diameter, hot-dip galvanized, carbon-steel wire.

   a. Basis-of-Design Product: Subject to compliance with requirements, provide Hohmann & Barnard, Inc.; X-Seal Anchor and Seismiclip or a comparable product by one of the following:

      1) Blok-Lok.
      2) RKL Building Specialties.

2.9 EMBEDDED FLASHING MATERIALS

A. Metal Flashing: Provide metal flashing complying with Section 076200 "Sheet Metal Flashing and Trim" and as follows:

1. Stainless Steel: ASTM A 240/A 240M or ASTM A 666, Type 304, 0.016 inch thick.
2. Fabricate continuous flashings in sections 96 inches long minimum, but not exceeding 12 feet. Provide splice plates at joints of formed, smooth metal flashing.
3. Fabricate through-wall metal flashing embedded in masonry from stainless steel, with ribs at 3-inch intervals along length of flashing to provide an integral mortar bond.
4. Fabricate through-wall flashing with snaplock receiver on exterior face where indicated to receive counterflashing.
5. Fabricate metal drip edges from stainless steel. Extend at least 3 inches into wall and 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
6. Fabricate metal sealant stops from stainless steel. Extend at least 3 inches into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for 3/4 inch and down into joint 1/4 inch to form a stop for retaining sealant backer rod.
7. Fabricate metal expansion-joint strips from stainless steel to shapes indicated.
8. Solder metal items at corners.

B. Flexible Flashing: Use the following unless otherwise indicated:

1. Stainless Steel/Polymer Fabric Flashing: ASTM A240/A240M stainless steel bonded with rubber-based adhesive to one sheet of polymer fabric, and manufacturer’s standard, self-adhering, stainless steel lap tape. Use only where flashing is fully concealed in masonry.

a. Basis-of Design Product: Subject to compliance with requirements, provide Hohmann & Barnard, Inc.; Mighty-Flash Flashing or comparable product by one of the following:

1) York Manufacturing, Inc.; Multi-Flash SS
2) RKL Building Specialties.
3) Sandell Manufacturing.

C. Application: Unless otherwise indicated, use the following:

1. Where flashing is indicated to receive counterflashing, use metal flashing.
2. Where flashing is indicated to be turned down at or beyond the wall face, use metal flashing.
3. Where flashing is partly exposed and is indicated to terminate at the wall face, use metal flashing with a drip edge or flexible flashing with a metal drip edge.
4. Where flashing is fully concealed, use flexible flashing.

D. Single-Wythe CMU Flashing System: System of CMU cell flashing pans and interlocking CMU web covers made from UV-resistant, high-density polyethylene. Cell flashing pans have integral weep spouts designed to be built into mortar bed joints and that extend into the cell to prevent clogging with mortar.

E. Solder and Sealants for Sheet Metal Flashings: As specified in Section 076200 "Sheet Metal Flashing and Trim."

F. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

G. Termination Bars for Flexible Flashing: Stainless-steel sheet 0.019 inch by 1 inches with a 3/8 inch sealant flange at top.

H. Stainless Steel Drip Edge Flashing: 26 GA. (304 SS)

2.10 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Pre-molded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.

B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D 226/D 226M, Type I (No. 15 asphalt felt).

D. Weep/Cavity Vent Products: Use the following unless otherwise indicated:

1. Mesh Weep/Vent: Free-draining mesh; made from polyethylene strands, full height and width of head joint and depth 1/8 inch less than depth of outer wythe; in color selected from manufacturer's standard.

    a. Basis-of-Design Product: Subject to compliance with requirements, provide Wire-Bond; Cavity Net Weep Vent or comparable product by one of the following:

        1) Hohmann & Barnard, Inc.
        2) Advanced Building Products
        3) CavClear/Archovations, Inc.; Weep Vents
        4) Keene Building Products; Driwall Weep Vents
        5) Mortar Net Solutions

E. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity. Installed per manufacturer’s recommendations.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Wire-Bond; Cavity Net DT or comparable product by one of the following:

    a. Advanced Building Products Inc.
    b. CavClear/Archovations, Inc.
    c. Heckmann Building Products, Inc.
    d. Hohmann & Barnard, Inc.
    e. Mortar Net Solutions.

2.11 MASONRY CLEANERS

A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Diedrich Technologies, Inc.; a division of Sandell Construction Solutions.
    b. EaCo Chem, Inc.
    c. PROSOCO, Inc.

2.12 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.

B. Mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

C. Mortar for Unit Masonry: Comply with ASTM C 270, Property Specification. Provide the following types of mortar for applications stated unless another type is indicated.

1. For masonry below grade or in contact with earth, use Type S.
2. For reinforced masonry, use Type S**.**
3. For exterior, above-grade, loadbearing, and non-loadbearing walls, use Type S;
4. For interior load-bearing walls; for interior non-loadbearing partitions; and for other applications where another type is not indicated, use Type N.

D. Pigmented Mortar: Use colored cement product and proportion pigments with other ingredients to produce color required. Do not add pigments to colored cement products.

1. Pigments shall not exceed 10 percent of portland cement by weight.
2. Pigments shall not exceed 5 percent of masonry cement or mortar cement by weight.
3. Application: Use pigmented mortar for exposed mortar joints with the following units:
   a. Clay face brick.

E. Grout for Unit Masonry: Comply with ASTM C 476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
2. Proportion grout in accordance with ASTM C 476, paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
3. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143/C 143M.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
2. Verify that foundations are within tolerances specified.
3. Verify that reinforcing dowels are properly placed.
4. Verify that substrates are free of substances that impair mortar bond.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.

B. Build chases and recesses to accommodate items specified in this and other Sections.

C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.

D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.

F. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

G. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested according to ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.

3.3 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.

6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.
5. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

3.4 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.

C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4 inches. Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.

D. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.

G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.

H. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

I. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
   1. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 078443 "Joint Firestopping."

3.5 MORTAR BEDDING AND JOINTING

A. Lay CMUs as follows:

   1. Bed face shells in mortar and make head joints of depth equal to bed joints.
   2. Bed webs in mortar in all courses of piers, columns, and pilasters.
   3. Bed webs in mortar in grouted masonry, including starting course on footings.
   4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
   5. Fully bed units and fill cells with mortar at anchors and ties as needed to fully embed anchors and ties in mortar.

B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

   1. For glazed masonry units, use a nonmetallic jointer 3/4 inch or more in width.

D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

3.6 COMPOSITE MASONRY

A. Bond wythes of composite masonry together as follows:

   1. Masonry-Joint Reinforcement: Installed in horizontal mortar joints.

      a. Where bed joints of both wythes align, use ladder-type reinforcement extending across both wythes.
      b. Where bed joints of wythes do not align, use adjustable-type (two-piece-type) reinforcement[with continuous horizontal wire in facing wythe attached to ties].

   2. Header Bonding: Provide masonry unit headers extending not less than 3 inches into each wythe. Space headers not more than 8 inches clear horizontally and 16 inches clear vertically.

B. Bond wythes of composite masonry together using bonding system indicated on Drawings.

C. Collar Joints: Solidly fill collar joints by parging face of first wythe that is laid and shoving units of other wythe into place.

D. Corners: Provide interlocking masonry unit bond in each wythe and course at corners unless otherwise indicated.

1. Provide continuity with masonry-joint reinforcement at corners by using prefabricated L-shaped units as well as masonry bonding.

E. Intersecting and Abutting Walls: Unless vertical expansion or control joints are shown at juncture, bond walls together as follows:
1. Provide continuity with masonry-joint reinforcement by using prefabricated T-shaped units.
2. Provide rigid metal anchors not more than 24 inches o.c. If used with hollow masonry units, embed ends in mortar-filled cores.

3.7 CAVITY WALLS

A. Bond wythes of cavity walls together using bonding system indicated on Drawings.

B. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity.

C. Coat cavity face of backup CMU wythe to comply with Division 7 Section “Bituminous Dampproofing”

D. Installing Cavity Wall Insulation: Place small dabs of adhesive, spaced approximately 12 inches o.c. both ways, on inside face of insulation boards, or attach with plastic fasteners designed for this purpose. Fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown.

1. Fill cracks and open gaps in insulation with crack sealer compatible with insulation and masonry.

3.8 ANCHORED MASONRY VENEERS

A. Anchor masonry veneers to masonry backup with seismic masonry-veneer anchors to comply with the following requirements:
1. Embed tie sections connector sections and continuous wire in masonry joints.
2. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
3. Space anchors as indicated, but not more than 16 inches o.c. vertically and 24 inches o.c. horizontally, with not less than one anchor for each 2 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 8 inches, around perimeter.

B. Provide not less than 1 inch of airspace between back of masonry veneer and face of insulation.

1. Keep airspace clean of mortar droppings and other materials during construction. Bevel beds away from airspace, to minimize mortar protrusions into airspace. Do not attempt to trowel or remove mortar fins protruding into airspace.

3.9 MASONRY-JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.

1. Space reinforcement not more than 16 inches o.c.
2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.

B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.

C. Provide continuity at wall intersections by using prefabricated T-shaped units.

D. Provide continuity at corners by using prefabricated L-shaped units.

E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.10 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

A. Anchor masonry to structural steel and concrete, where masonry abuts or faces structural steel or concrete, to comply with the following:

1. Provide an open space not less than 1 inch wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.
2. Anchor masonry with anchors embedded in masonry joints and attached to structure.
3. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

3.11 CONTROL AND EXPANSION JOINTS

A. General: Install control- and expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.

B. Form control joints in concrete masonry using one of the following methods:

1. Fit bond-breaker strips into hollow contour in ends of CMUs on one side of control joint. Fill resultant core with grout, and rake out joints in exposed faces for application of sealant.
2. Install preformed control-joint gaskets designed to fit standard sash block.

3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar, or rake out joint for application of sealant.
4. Install temporary foam-plastic filler in head joints, and remove filler when unit masonry is complete for application of sealant.

C. Form expansion joints in brick as follows:

1. Build flanges of metal expansion strips into masonry. Lap each joint 4 inches in direction of water flow. Seal joints below grade and at junctures with horizontal expansion joints if any.
2. Build flanges of factory-fabricated, expansion-joint units into masonry.
3. Build in compressible joint fillers where indicated.
4. Form open joint full depth of brick wythe and of width indicated, but not less than 3/8 inch for installation of sealant and backer rod specified in Section 079200 "Joint Sealants."

D. Provide horizontal, pressure-relieving joints by either leaving an airspace or inserting a compressible filler of width required for installing sealant and backer rod specified in Section 079200 "Joint Sealants," but not less than 3/8 inch.

1. , pressure-relieving joints beneath shelf angles supporting masonry.

3.12 LINTELS

A. Install steel lintels where indicated.

B. Provide masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.

C. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.13 FLASHING, WEEP HOLES, AND CAVITY VENTS

A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.

B. Install flashing as follows unless otherwise indicated:

1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
2. At multi-wythe masonry walls, including cavity walls, extend flashing through outer wythe, turned up a minimum of 8 inches, and through inner wythe to within 1/2 inch of the interior face of wall in exposed masonry. Where interior face of wall is to receive furring or framing, carry flashing completely through inner wythe and turn flashing up approximately 2 inches on interior face.

3. At masonry-veneer walls, extend flashing through veneer, across airspace behind veneer, and up face of sheathing at least 8 inches; with upper edge tucked under water-resistive barrier/air barrier], lapping at least 4 inches. Fasten upper edge of flexible flashing to sheathing through termination bar.
4. At lintels and shelf angles, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.
5. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal drip edge.
6. Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal flashing termination.
7. Cut flexible flashing off flush with face of wall after masonry wall construction is completed.

C. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.

D. Install weep holes in exterior wythes and veneers in head joints of first course of masonry immediately above embedded flashing.

1. Use specified weep/cavity vent products to form weep holes.
2. Use wicking material to form weep holes above flashing under brick sills. Turn wicking down at lip of sill to be as inconspicuous as possible.
3. Space weep holes 24 inches o.c. unless otherwise indicated.
4. Cover cavity side of weep holes with plastic insect screening at cavities insulated with loose-fill insulation.
5. Trim wicking material flush with outside face of wall after mortar has set.

E. Place pea gravel in cavities as soon as practical to a height equal to height of first course above top of flashing, but not less than 2 inches, to maintain drainage.

F. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.

G. Install cavity vents in head joints in exterior wythes at spacing indicated. Use specified weep/cavity vent products to form cavity vents.

1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

H. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.

I. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.

1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.

3.14 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
3. Protect adjacent stone and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
6. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.
7. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

3.15 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

B. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, or recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 042000

SECTION 05 12 00

STRUCTURAL STEEL

1.01 SUMMARY

A. Description of scope and intent:
1. CONTRACTOR shall provide all material, labor, and tools required to complete the installation of specified system.
2. Any omission of reference to items required to complete the full operational and functional system specified in the section does not relieve the CONTRACTOR of the obligation to provide same.
3. To provide installation of all items, including delivery, dispersing to the proper locations within the building, and affixing in place.
4. Installation shall be accomplished by workers skilled in their craft who will perform their work in a professional manner and will leave the premises safe, orderly and clean.
5. Drawings and general provisions of Contract, including General and Supplemental Conditions and Division 1 Specification Sections, apply to this Section.
6. CONTRACTOR is responsible for coordination of work included in this specification with all other specification sections related to furnishing of all materials, labor, permits, fees and services necessary for completion of work in this Section.
7. In the event of a conflict between the Design Drawings, referenced standards and these Specifications, the more stringent shall govern unless directed otherwise by the ENGINEER. CONTRACTOR shall strictly adhere to OSHA requirements and local codes or those of any regulatory agency or body with jurisdiction.

B. Section Includes:
1. Fabrication and erection of structural steel framing members, as defined in AISC Code and as indicated on the drawings.
2. Fabrication and erection of architecturally exposed structural steel (AESS).
3. Welding.
4. Shop painting.

C. Products furnished but not installed under this section:
1. Steel anchorages cast in concrete.
2. Steel anchorages embedded in masonry.

1.02 REFERENCES

Comply with the following documents, except where requirements of the Contract Documents or of governing codes and governing authorities are more stringent. All referenced standards refer to the edition in force at the time these plans and specifications are issued.

A. ASTM A 36 -- Standard Specification for Structural Steel

B. ASTM A 6 – General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use

C. ASTM A 123 -- Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

D. ASTM A 307-- Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength

E. ASTM A 325-- Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength

F. ASTM A 500-- Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes

G. ASTM A 786 – Rolled Steel Floor Plates

H. ASTM A 992 – Specification for Structural Steel Shapes

I. ASTM C 1107-- Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)

J. ASTM E 94 -- Standard Guide for Radiographic Testing

K. ASTM E 142-- Standard Method for Controlling Quality of Radiographic Testing

L. ASTM E 164-- Standard Practice for Ultrasonic Contact Examination of Weldments

M. ASTM E 165-- Standard Test Method for Liquid Penetrant Examination

N. ASTM E 709-- Standard Guide for Magnetic Particle Examination

O. ASTM F 959-- Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners

P. AWS D1.1-- Structural Welding Code - Steel; American Welding Society

Q. Code of Standard Practice for Steel Buildings and Bridges; American Institute of Steel Construction, Inc. (AISC)

R. Specification for Structural Steel Buildings -- Allowable Stress Design and Plastic Design; American Institute of Steel Construction, Inc. (AISC)

S. Specification for Structural Joints Using ASTM A325 or A490 Bolts; Research Council on Structural Connections; American Institute of Steel Construction, Inc. (AISC)

T. Steel Structures Painting Manual, Volume 2, Systems and Specifications; Steel

Structures Painting Council (SSPC)

1.03 DEFINITIONS

A. Structural Steel: Items as listed in 2.1 of AISC "Code of Standard Practice for Steel Buildings and Bridges," and excluding steel, iron, or other metal items not listed, even if attached to the structural framing.

1.04 SYSTEM DESCRIPTION

A. General: Unless otherwise specifically approved in writing, furnish exact sections, weights, and kinds of material specified, using details and dimensions shown.
   1. Not all connections are detailed; similar details apply to similar conditions, unless otherwise indicated. Contact the Architect promptly to verify design of members or connections in any situation where design requirements are unclear.

1.05 SUBMITTALS

A. Provide submittals in accordance with Section 01300.

B. Product Data: Producer's or manufacturer's information for products as follows, including sufficient data to show compliance with specified requirements:
   1. Mill test reports for each type of structural steel furnished.
   2. Test reports for high-strength bolts, nuts, and washers, including chemical analysis, tensile strength tests, and hardness tests.
   3. Test reports for direct tension indicators.
   4. Specifications for primer paint, including manufacturer's data on chemical composition, adhesion of spray fireproofing, and dry film thickness per applied coat.
   5. Specifications for non-shrink grout.

C. Shop Drawings: Complete drawings for structural steel, including information on location, type, and size of all connections, distinguishing between those made in the shop and those made in the field.
   1. Indicate weld lengths and sizes, using standard American Welding Society (AWS) welding symbols.
   2. Include setting drawings and templates for anchorages to be installed by others.
   3. Prepare shop drawings under the seal of a professional structural ENGINEER registered in the state of Florida.
   4. The fabricator is specifically responsible for the adequacy of any connections designed by the fabricator to performance standards established in the contract documents. Approval by the ENGINEER of shop drawings shall not relieve the fabricator of this responsibility, despite wording to the contrary in paragraph 4.2.1 of the AISC Code.

D. Test Reports: Submit test reports for all specified tests of connections.

E. Welder Qualifications: Evidence that welders employed in the work are currently certified under American Welding Society (AWS) qualification procedures.

F. Surveys: Certified copies of specified surveys, showing locations of all critical elements and deviations from data shown on Contract documents.

1.06 QUALITY ASSURANCE

A. Welding Procedures: Establish that joint welding procedures are prequalified or test in accordance with American Welding Society (AWS) qualification procedures.

B. Regulatory Requirements: Unless other requirements of governing authorities or particular requirements of this specification are more stringent, comply with provisions of the following:
1. AISC "Code of Standard Practice for Steel Buildings and Bridges."
2. AISC "Specification for Structural Steel Buildings -- Allowable Stress Design and Plastic Design," with Commentary and Supplements.
3. AWS D1.1, "Structural Welding Code - Steel."

C. Testing and Inspection Agency: Engage an independent testing and inspection agency acceptable to the OWNER to perform testing, inspect and evaluate connections, and prepare test reports.
1. Correct deficiencies in the structural steel work identified by the testing and inspection agency at no additional expense to the OWNER. Subsequent tests to confirm the adequacy of corrected work will be at the CONTRACTOR's expense.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Shipping: Deliver steel in timely fashion, to permit the most efficient and economical flow of work. Deliver steel members properly marked for field assembly and erection.
1. Deliver anchor bolts, washers, and other anchorage devices to be built into other work in time to avoid delays and permit their proper installation.

B. Storage: Protect steel and other materials of this section from damage and corrosion. If temporary storage at the project site is required, keep steel members off the ground, using platforms or pallets, in location easily accessible for inspection.

PART 2- PRODUCTS

2.01 STEEL MATERIALS

A. AESS Materials - General: For members which will be exposed in the finished work and have been identified as AESS on the drawings, provide only materials which are free of surface blemishes such as pitting, roller marks, rolled trade names, and surface roughness.

B. Structural Steel Members (refer to plans for locations indicated):
1. Wide flanges and WT sections: ASTM A992, Fy=50 ksi
2. Channels, angles, plates, and miscellaneous steel: ASTM A36, Fy=36 ksi
3. 316 Stainless Steel: ASTM A484, ASTM A276, Fy=30 ksi
4. Structural Tubing, Cold-Formed: ASTM A500, Fy=46 ksi
5. Steel Pipe: ASTM A53, Type E or S, Grade B, Fy=35 ksi

C. Anchor Bolts: ASTM F1554, Carbon steel, Grade 36; ASTM A 36 steel plate washers.

D. Bolts and Nuts:
1. Carbon Steel: ASTM A307, Grade A
2. High Strength Steel: ASTM A325, Type 1, plain (medium carbon steel)
3. Stainless Steel: ASTM F593, ASTM F594
4. AESS: Provide hexagonal bolt heads and nuts at all exposed connections.

E. Hardened Washers: ASTM F436, ASTM A240 (for stainless)
1. Dimensional requirements shall meet ANSI B18.22.1, Type A plain.

F. Direct Tension Indicators: At CONTRACTOR's option, provide either load indicator washers complying with ASTM F 959 or snap-off high-strength bolts certified to provide the minimum fastener tension in accordance with AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts" at all connections requiring high-strength bolts.

G. Shear Connectors: ASTM A108, Grades 1010 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1, Type B. Minimum Yield Strength = 50 ksi. Test Shear connectors in accordance with AWS. All studs shall be a minimum ¾" diameter unless otherwise noted.

2.02 MISCELLANEOUS MATERIALS

A. Welding Electrodes and Fluxes: AWS D1.1, Types as follows:
1. E70XX.

B. Nonshrink Grout: Prepackaged material requiring only the addition of water and complying with ASTM C 1107, and as follows:
1. Natural aggregate (nonmetallic) type.
2. Products: The following products, provided they comply with requirements of the contract documents, will be among those considered acceptable:
a. "Masterflow 928"; Master Builders, Inc.
b. "Sonogrout 14k"; Sonneborn Building Products Division/ChemRex, Inc.
c. "Euco N-S Grout"; The Euclid Chemical Company.
d. "Supreme"; Cormix Construction Chemicals.
e. "Five Star Grout"; Five Star Products, Inc.

C. Shop Primer: Fabricator's standard primer.

2.03 FABRICATION

A. Shop Assembly - General: Comply with requirements of AISC Specifications. Shop fabricate and assemble to maximum degree possible.
1. AESS: Comply with requirements of AISC Code for architecturally exposed structural steel.
a. Appearance: Cut, fit, and assemble units with exposed surfaces smooth, square, and free from cutting marks, shear distortion, burrs, and nicks.
b. Tolerances: As specified in AISC Code for AESS, unless more stringent

requirements are indicated on the drawings.

B. Thermal Cutting: Perform all thermal cutting by machine.
   1. Plane thermally cut edges which are to be welded.

C. Connections
   1. Shop connections: As indicated on the drawings.
   2. Field connections: As indicated on the drawings.
   3. Bolts: High-strength steel bolts, except as otherwise indicated.
      a. Bolting: Comply with requirements of AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts."
   4. Welds: Comply with requirements of AWS Code for welding procedures and quality of welds, including appearance.
      a. Built-up sections: Assemble components and weld using procedures which will maintain proper alignment of finished section.
      b. AESS: Verify that weld sizes, fabrication sequence, and equipment to be employed will limit distortions to allowable tolerances. Surface bleed of back-side welding on exposed surfaces will not be acceptable.
         1) Grind smooth exposed fillet welds 1/2 inch and larger.
         2) Grind flush butt welds.
         3) Dress all exposed welds.

D. Finishing: Accurately mill ends of columns and other members which must transmit loads in bearing.

E. Holes in Steel Members: Make all holes by means of cutting, drilling, or punching at right angles to surface of metal. Do not make or enlarge holes by burning.
   1. Provide holes in steel members as required to permit connection of work by others.

2.04 SHOP COATING – GALVANIZING

A. Galvanize the following items:
   1. All structural steel exposed to weather and as indicated on drawings.

B. Preparation: Thoroughly clean members to be galvanized, removing loose rust and mill scale.

C. Galvanizing: Perform galvanizing after fabrication in accordance with requirements of ASTM A 123, except galvanize all fastener assemblies in accordance with ASTM A153, use galvanizing methods which provide surface suitable for painting with min class A slip coefficient (0.33).

2.05 SHOP COATING – PAINT

A. Shop prime all steel members, except:
   1. Galvanized steel members.
   2. Steel members embedded in concrete or mortar.
   3. Do not paint the following surfaces:
      a. Machined or milled surfaces.

b. Surfaces adjacent to field welds.
c. Faying surfaces of bolted connections.
d. Portions of member that receive a special coating. Refer to Section 09900.

B. Preparation: Thoroughly clean steel surfaces to be shop primed, removing loose rust, loose mill scale, dirt, oil, and grease. Clean steel in accordance with SSPC procedures as follows:
1. Power tool or blast cleaning: SSPC SP-3, -5, -6, or -10.

C. Painting: As soon as possible after cleaning, apply specified paint coating, refer to Section 09900 for coatings. Apply coatings in accordance with instructions of paint manufacturer. Apply coatings at a rate sufficient to provide a finished thickness to meet the requirements of Section 09900.

2.06 SHOP QUALITY CONTROL

A. Testing and Inspection:
1. General: Provide access to testing and inspection agency so that specified testing and inspection can be safely accomplished.
2. Shop bolted connections: Comply with testing and verification procedures in AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts," except test not less than the following number of bolts in each bolted connection: All slip critical connections as noted SC on drawings.
3. Shop welded connections: Inspect and test shop-fabricated welds as follows:
a. Visually inspect all welds.
b. Inspect 100. percent of full penetration welds, using test method as follows:
1) Radiographic testing (ASTM E 94 and ASTM E 142).
c. Inspect 20 percent of fillet welds, using one of the following test methods:
1) Radiographic Testing (ASTM E 94 and ASTM E 142).
2) Magnetic Particle Inspection (ASTM E 709).
3) Ultrasonic Testing (ASTM E 164).
4) Liquid Penetrant Inspection (ASTM E 165).

PART 3- EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Examine areas and conditions for erection of structural steel and verify that the work may properly proceed. Do not commence erection of structural steel until unsatisfactory conditions have been corrected or fabricated steel components have been adjusted with the architect's agreement.
1. Surveys: Conduct verification surveys by a professional ENGINEER or land surveyor registered in the state of Florida.

3.02 PREPARATION

A. Temporary Support: Provide temporary guys, braces, falsework, cribbing, or other elements required to secure the steel framing against loads equal in intensity to design loads. Remove such temporary support only when permanent connections

have been made and the steel framing is fully capable of supporting design loads, including any temporary construction loads.

3.03 ERECTION

A. General: Erect structural steel in compliance with AISC Code of Standard Practice and Specifications.
   1. AESS: Comply with erection requirements of AISC Code dealing with architecturally exposed structural steel.

B. Assembly:
   1. Set structural members accurately to locations and elevations indicated, within tolerances established in AISC Code, before making final connections.
   2. Do not use thermal cutting to correct fabrication errors on any major structural member.
      a. Thermal cutting of secondary members may be permitted by the architect upon request, but only when members involved are not loaded.

C. Columns and Bearing Surfaces:
   1. Clean bearing and contact surfaces before assembly. Slightly roughen concrete and masonry surfaces to improve bond.
   2. Set base and bearing plates accurately, using metal wedges, shims, or setting nuts as required.
   3. After tightening anchor bolts and ensuring that structure is plumb, grout solidly between plates and bearing surfaces.
      a. Comply with manufacturer's instructions for nonshrink grout.

D. Bolting:
   1. Carbon steel bolts: Use only for temporary bracing during erection, unless otherwise specifically permitted by contract documents.
   2. High-strength bolts: Comply with requirements of AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts."

E. Welding:
   1. Do not perform field welding when ambient temperature is at 0 degrees F or below, or when surfaces are wet, exposed to rain, snow, or high wind.
   2. Perform field welding in accordance with AWS "Structural Welding Code - Steel."
   3. Tighten and leave in place erection bolts used in field-welded construction.
      a. AESS: Verify that weld sizes, erection sequence, and equipment to be employed will limit distortions to allowable tolerances. Surface bleed of back-side welding on exposed surfaces is not acceptable.
         1) Grind smooth exposed fillet welds 1/2 inch and larger.
         2) Grind flush butt welds.
         3) Dress all exposed welds.
         4) Remove erection bolts, plug-weld bolt holes, and grind smooth.

F. Touch-up Painting: As soon as possible after erection of primed structural steel, clean painted areas which have been abraded or otherwise damaged by welding, bolting, or other field operations. Apply touch-up paint matching shop coating by brush or spray to all damaged paint areas, achieving a minimum final thickness of 1.5 mils.

3.04 FIELD QUALITY CONTROL

A. Testing and Inspection:
   1. General: Provide access to testing and inspection agency so that specified testing and inspection can be safely accomplished.
   2. Field-bolted connections: Comply with testing and verification procedures in AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts," except test not less than the following number of bolts in each bolted connection: All slip critical connections as noted “SC” on the drawings.
   3. Field-welded connections: Inspect and test field-fabricated welds as follows:
      a. Visually inspect all field welds.

END OF SECTION 05120

SECTION 05400

COLD-FORMED METAL FRAMING

PART 1 – GENERAL

1.01 SUMMARY

A. Description of scope and intent:
   1. CONTRACTOR shall provide all material, labor, and tools required to complete the installation of specified system.
   2. Any omissions of reference to items required to complete the full operational and functional system specified in the section does not relieve the CONTRACTOR of the obligation to provide same.
   3. To provide installation of all items, including delivery, dispersing to the proper locations within the building, and affixing in place.
   4. Installation shall be accomplished by workers skilled in their craft that will perform their work in a professional manner and will leave the premises safe, orderly and clean.
   5. Drawings and general provisions of Contract, including JEA General and Supplementary Conditions and Division 1 Specifications Sections, apply to this section.
   6. CONTRACTOR is responsible for coordination of work included in this specification with all other specification sections related to furnishing of all materials, labor, permits, fees and services necessary for completion of Work in this section.

B. Section Includes:
   1. Exterior wall framing.
   2. Interior load-bearing wall framing.
   3. Roof rafter framing.
   4. Roof equipment support framing.

C. Related Sections include the following:
   1. Division 5 Section "Metal Fabrications" for masonry shelf angles and connections.
   2. Division 6 Section "Rough Carpentry" for sub-flooring, wall sheathing, or roof sheathing using wood-based structural-use panels, particleboard, fibrous-felted board, and foam-plastic sheathing.
   3. Division 9 Section "Gypsum Board Assemblies" for interior non-load-bearing metal-stud framing and ceiling-suspension assemblies.
   4. Division 9 Section "Gypsum Board Shaft-Wall Assemblies" for interior non-load-bearing, metal-stud-framed, shaft-wall assemblies.

1.02 DEFINITIONS

A. Minimum Uncoated Steel Thickness: Minimum uncoated thickness of cold-formed framing delivered to the Project site shall be not less than 95 percent of the thickness used in the cold-formed framing design. Lesser thickness shall be permitted at bends due to cold forming.

B. Producer: Entity that produces steel sheet coil fabricated into cold-formed members.

1.03 REFERENCES

Comply with the following documents, except where requirements of the Contract Documents or of governing codes and governing authorities are more stringent. All referenced standards refer to the edition in force at the time these Drawings and Specifications are issued.

A. ASTM A 90 -- Standard Test Method for Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles.

B. ASTM A 446-- Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality

C. ASTM A 570-- Standard Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality.

D. ASTM A 611-- Standard Specification for Steel, Sheet, Carbon, Cold-Rolled, Structural Quality.

E. ASTM C 1007-- Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.

F. ASTM A 653—Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

1.04 SUBMITTALS

A. Provide submittals in accordance with Section 01300.

B. Product Data: For each type of cold-formed metal framing product and accessory indicated.

C. Shop Drawings: Show layout, spacing, sizes, thickness, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining Work.

D. Mill certificates signed by steel sheet producer indicating steel sheet complies with requirements.

E. Welding Certificates: Copies of certificates for welding procedures and personnel.

F. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and OWNERs, and other information specified.

G. Product Test Reports: From a qualified testing agency indicating that each of the following complies with requirements, based on comprehensive testing of current products:
   1. Mechanical fasteners.
   2. Miscellaneous structural clips and accessories.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer with minimum of five (5) years experience and who has completed cold-formed metal framing similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Mill certificates signed by steel sheet producer indicating steel sheet complies with requirements, including uncoated steel thickness, yield strength, tensile strength, total elongation, chemical requirements, ductility, and galvanized-coating thickness.

C. Testing Agency Qualifications: Employ, at CONTRACTOR’s expense, an independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.

D. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."

E. Fire-Test-Response Characteristics: Refer to Architectural specifications for all fire ratings.

F. AISI Specifications: Comply with AISI's "Specification for the Design of Cold-Formed Steel Structural Members" for calculating structural characteristics of cold-formed metal framing**:**
   1. CCFSS Technical Bulletin: "AISI Specification Provisions for Screw Connections."

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling. Follow all MANUFACTURER’s written instruction unless otherwise noted herein.

B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation. Follow all MANUFACTURER’s written instruction unless otherwise noted herein.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Available manufacturers: Subject to compliance with requirements, MANUFACTURERs offering cold-formed metal framing that may be incorporated into the Work include, but are not limited to, the following:
   1. Dietrich Industries, Inc.

2.02 MATERIALS

A. Steel Sheet: ASTM A 653/A 653M, structural steel, zinc coated, of grade and coating as follows:
   1. Grade: As indicated on drawings.
   2. Coating: G90 for cold-formed metal framing elements exposed to environmental elements or G60 for cold-formed metal framing elements covered by veneer or inside the envelope of the building.

2.03 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories of the same material and finish used for framing members, with a minimum yield strength of 45,000 psi.

B. Provide accessories of MANUFACTURER's standard thickness and configuration, unless otherwise indicated, as follows:
   1. Supplementary framing.
   2. Bracing, bridging, and solid blocking.
   3. Web stiffeners.
   4. End clips.

2.04 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A 36, zinc coated by hot-dip process according to ASTM A 123.

B. Anchor Bolts: ASTM F 1554, Grade 36, threaded carbon-steel bolts and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A 153/A 153M, Class C.

C. Mechanical Fasteners: Corrosion-resistant-coated, self-drilling, self-threading steel drill screws as indicated on drawings.

D. Welding Electrodes: Comply with AWS standards.

2.05 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035, ASTM A 780.

2.06 FABRICATION

A. Fabricate cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to MANUFACTURER's written recommendations and requirements in this Section.
   1. Fabricate framing assemblies using jigs or templates.
   2. Cut framing members by sawing or shearing; do not torch cut.
   3. Fasten cold-formed metal framing members as indicated on the drawings. Wire tying of framing members is not permitted.

B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.

C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
   1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
   2. Squareness: Fabricate each cold-formed metal framing assembly to a maximum out-of-square tolerance of 1/8 inch.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Grout bearing surfaces uniform and level to ensure full contact of bearing flanges or track webs on supporting concrete.

3.02 INSTALLATION, GENERAL

A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed metal framing according to ASTM C 1007, unless more stringent requirements are indicated.

C. Install cold-formed framing and securely anchor to supporting structure.
   1. Bolt wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.

D. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to MANUFACTURER's written recommendations and requirements in this Section.
   1. Cut framing members by sawing or shearing; do not torch cut.
   2. Fasten cold-formed metal framing members by screw fastening, as standard with fabricator and indicated on drawings. Wire tying of framing members is not permitted.

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E. Install framing members in one-piece lengths, unless splice connections are indicated for track or tension members.

F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.

G. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.

H. Install insulation in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work. Refer to architectural for insulation requirements

I. Fasten hole-reinforcing plate over web penetrations that exceed size of MANUFACTURER's standard punched openings.

J. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
   1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.03 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and MANUFACTURER's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to MANUFACTURER and Installer, that ensure cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 05400

SECTION 05 50 00

METAL FABRICATIONS

PART 1- GENERAL

1.1 SUMMARY

A. Description of scope and intent:

1. Contractor to provide all material, labor, and tools required to complete the installation of specified system.
2. Any omission of reference to items required to complete the full operational and functional system specified in the section does not relieve the contractor of the obligation to provide same.
3. To provide installation of all items, including delivery, dispersing to the proper locations within the building, and affixing in place.
4. Installation shall be accomplished by workers skilled in their craft that will perform their work in a professional manner and will leave the premises safe, orderly and clean.
5. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
6. Contractor is responsible for coordination of work included in this specification with all other specification sections related to furnishing of all materials, labor, permits, fees and services necessary for completion of work in this Section.

B. Section Includes:

1. Steel framing and supports for applications where framing and supports are not specified in other Specification Sections or on the Structural Drawings.

1.2 SUBMITTALS

A. Provide submittals in accordance with Section 01300.

B. Shop Drawings: Detail fabrication and erection of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

1. Provide templates for anchors and bolts specified for installation under other Sections.

C. Welding Certificates: Copies of certificates for welding procedures and personnel.

1.3 QUALITY ASSURANCE

A. Fabricator Qualifications: A firm experienced in producing metal fabrications similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

1. Welding: Qualify procedures and personnel according to the following:
   a. AWS D1.1, "Structural Welding Code--Steel."
   b. AWS D1.3, "Structural Welding Code--Sheet Steel."
   c. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

1.4 PROJECT CONDITIONS

A. Field Measurements: Where metal fabrications are indicated to fit walls and other construction, verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions. Allow for trimming and fitting.

1.5 COORDINATION

A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

PART 2- PRODUCTS

2.1 METALS, GENERAL

A. Metal Surfaces, General: For metal fabrications exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

2.2 FERROUS METALS

A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Malleable-Iron Castings: ASTM A 47, Grade 32510.

C. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

2.3 PAINT

A. Shop Primer for Ferrous Metal: Fast-curing, lead and chromate free, universal modified-alkyd primer complying with performance requirements in FS TT-P-664; selected for good resistance to normal atmospheric corrosion, compatibility with finish paint systems indicated, and capability to provide a sound foundation for field-applied topcoats despite prolonged exposure.

B. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.

2.4 FASTENERS

A. General: Provide Type 304 or 316 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, where built into exterior walls. Select fasteners for type, grade, and class required.

B. Anchor Bolts: ASTM F 1554, Grade 36.

C. Machine Screws: ASME B18.6.3.

D. Lag Bolts: ASME B18.2.1.

E. Wood Screws: Flat head, carbon steel, ASME B18.6.1.

F. Plain Washers: Round, carbon steel, ASME B18.22.1.

G. Lock Washers: Helical, spring type, carbon steel, ASME B18.21.1.

H. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in

concrete, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.

1. Material: Carbon-steel components zinc-plated to comply with ASTM B 633, Class Fe/Zn 5.

I. Toggle Bolts: FS FF-B-588, tumble-wing type, class and style as needed.

2.5 GROUT

A. Nonshrink, Metallic Grout: Factory-packaged, ferrous-aggregate grout complying with ASTM C 1107, specifically recommended by manufacturer for heavy-duty loading applications.

2.6 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Shear and punch metals cleanly and accurately. Remove burrs.

C. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

E. Provide for anchorage of type indicated, coordinate with supporting structure. Fabricate and space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

F. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

G. Fabricate joints that will be exposed to weather in a manner to exclude water or provide weep holes where water may accumulate.

H. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.

I. Remove sharp or rough areas on exposed traffic surfaces.

J. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous.

2.7 STEEL ANGLES

A. Fabricate angles from steel angles of sizes required or indicated and for attachment to concrete framing. Provide horizontally slotted holes to receive 3/4-inch bolts, spaced not more than 6 inches from ends and 24 inches o.c., unless otherwise indicated.

B. For cavity walls, provide vertical channel brackets to support angles from backup masonry and concrete. Align expansion joints in angles with indicated control and expansion joints.

C. Galvanize steel angles to be installed in all walls. All exposed exterior angles shall also be painted.

2.8 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports that are not a part of structural-steel framework as necessary to complete the Work.

B. Fabricate units from structural-steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.

1. Fabricate units from slotted channel framing where indicated.

C. Galvanize all miscellaneous framing and supports.

2.9 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish metal fabrications after assembly.

2.10 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:

1. ASTM A 123, for galvanizing steel and iron products.
2. ASTM A 153/A 153M, for galvanizing steel and iron hardware.

B. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface-preparation specifications and environmental exposure conditions of installed metal fabrications:

1. Exteriors (SSPC Zone 1B): SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."

2. Interiors (SSPC Zone 1A): SSPC-SP 3, "Power Tool Cleaning."

C. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes and those to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1," for shop painting.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal fabrications to in-place construction. Include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

E. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces. Clean bottom surface of plates.

G. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with grout.

1. Use nonshrink grout, either metallic or nonmetallic, in concealed locations where not exposed to moisture; use nonshrink, nonmetallic grout in exposed locations, unless otherwise indicated.
2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings, if any.

3.3 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 9 Section "Painting."

C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 05 50 00

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Roofing nailers.

B. Preservative treated wood materials.

C. Fire retardant treated wood materials.

D. Miscellaneous framing and sheathing.

E. Communications and electrical room mounting boards.

F. Concealed wood blocking, nailers, and supports.

1.2 RELATED REQUIREMENTS

A. Section 061700 Prefabricated Structural Wood

B. Section 092116 Gypsum Board Assemblies: Gypsum-based sheathing.

1.3 REFERENCE STANDARDS

A. ASTM A153/A153M Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.

B. ASTM D2898 Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2010.

C. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.

D. AWPA U1 Use Category System: User Specification for Treated Wood; American Wood Protection Association; 2012.

E. PS 1 Structural Plywood; 2009.

F. PS 20 American Softwood Lumber Standard; National Institute of Standards and Technology, Department of Commerce; 2010.

G. SPIB (GR) Grading Rules; Southern Pine Inspection Bureau, Inc.; 2014.

1.4 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide technical data on wood preservative materials and application instructions.

C. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping,

storage, or installation.

1.6 WARRANTY

A. See Section 017800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a one-year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. Species: Southern Pine, unless otherwise indicated.
   2. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
   3. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
   4. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

B. Lumber fabricated from old growth timber is not permitted.

2.2 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Grading Agency: Southern Pine Inspection Bureau, Inc. (SPIB).

B. Sizes: Nominal sizes as indicated on drawings, S4S.

C. Moisture Content: S-dry or MC19.

D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade.
   2. Boards: Standard or No. 3.

2.3 CONSTRUCTION PANELS

A. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

2.4 ACCESSORIES

A. Fasteners and Anchors:
   1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
   2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.
   3. Anchors: Toggle bolt type for anchorage to hollow masonry.

2.5 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
   1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
   2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Fire Retardant Treatment:
   1. Manufacturers:
      a. Arch Wood Protection, Inc: www.wolmanizedwood.com.
      b. Hoover Treated Wood Products, Inc: www.frtw.com.
      c. Substitutions: See Section 016000 - Product Requirements.
   2. Exterior Type: AWPA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
      a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
      b. Treat all exterior rough carpentry items.
      c. Do not use treated wood in direct contact with the ground.
   3. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
      a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
      b. Treat rough carpentry items as indicated.
      c. Do not use treated wood in applications exposed to weather or where the wood may become wet.

C. Preservative Treatment:
   1. Manufacturers:
      a. Arch Wood Protection, Inc: www.wolmanizedwood.com.
      b. Koppers Performance Chemicals, Inc: www.koppersperformancechemicals.com.
      c. Viance, LLC: www.treatedwood.com.
      d. Substitutions: See Section 016000 - Product Requirements.

D. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.25 lb/cu ft retention.
   1. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
   2. Treat lumber exposed to weather.
   3. Treat lumber in contact with roofing, flashing, or waterproofing.
   4. Treat lumber in contact with masonry or concrete.

5. Treat lumber less than 18 inches above grade.
6. Preservative Pressure Treatment of Plywood Above Grade: AWPA U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative to 0.25 lb/cu ft retention.
   a. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
   b. Treat plywood in contact with roofing, flashing, or waterproofing.
   c. Treat plywood in contact with masonry or concrete.
   d. Treat plywood less than 18 inches above grade.

PART 3 EXECUTION

3.1 PREPARATION

A. Coordinate installation of rough carpentry members specified in other sections.

3.2 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.3 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In framed assemblies that have concealed spaces, provide solid wood fire blocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.

C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.

D. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

E. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

F. Provide the following specific non-structural framing and blocking:
   1. Cabinets, casework and shelf supports.
   2. Wall brackets and hardware.
   3. Handrails.
   4. Grab bars.
   5. Towel and bath accessories.
   6. Wall-mounted door stops.
   7. Chalkboards and marker boards.
   8. Wall paneling and trim.
   9. Joints of rigid wall coverings that occur between studs.
   10. Projection screens, curtain tracks, draperies, blinds and other fixtures and

equipment.

11. Exterior equipment, fixture, bases and support elements.

3.4 ROOF-RELATED CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

B. Provide wood curb at all roof openings except where specifically indicated otherwise. Form corners by alternating lapping side members.

3.5 INSTALLATION OF CONSTRUCTION PANELS

A. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.

1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
3. Install adjacent boards without gaps.
4. Size: 48 by 96 inches, installed horizontally at ceiling height.

3.6 SITE APPLIED WOOD TREATMENT

A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.

B. Allow preservative to dry prior to erecting members.

3.7 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

C. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.8 CLEANING

A. Waste Disposal: Comply with the requirements of Section 017419 - Construction Waste Management and Disposal.

1. Comply with applicable regulations.
2. Do not burn scrap on project site.
3. Do not burn scraps that have been pressure treated.
4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION 06 10 00

SECTION 06 41 13

ARCHITECTURAL WOOD CASEWORK

PART 1 -

1.1 SUMMARY

A. Section Includes:

1. Custom casework.

a. Transparent-finished casework.
b. Opaque-finished casework.
c. Plastic-laminate-finished casework.

2. Countertops.

a. Wood countertops.
b. Plastic-laminate-finished countertops.

3. Cabinet hardware.
4. Interior finish carpentry.

a. Standing and running trim.
b. Stairs, handrails, and balustrades
c. Shelving.
d. Door frames.

5. Prefinish the Work of this Section.

B. Related Requirements:

1. Section 061053 - Miscellaneous Rough Carpentry: Grounds and support framing.
2. Section 062000 - Finish Carpentry: Exterior finish carpentry.
3. Section 064214 - Stile and Rail Wood Paneling.
4. Section 064216 - Flush Wood Paneling.
5. Section 088000 - Glazing: Glass for casework.
6. Section 099000 - Painting and Coating: Site finishing of cabinet exterior and interior.

1.2 REFERENCE STANDARDS

A. American National Standards Institute:

1. ANSI A135.4 - Basic Hardboard.
2. ANSI A156.9 - Cabinet Hardware.
3. ANSI A208.1 - Mat-Formed Wood Particleboard.

B. APA - The Engineered Wood Association:

1. APA/EWA PS 1 - Voluntary Product Standard for Construction and Industrial Plywood.

C. Architectural Woodwork Institute, Woodwork Institute, and Architectural Woodwork Manufacturers Association of Canada:

1. AWS - Architectural Woodwork Standards.
2. Supplemented with The WI Approach.

D. ASTM International:
1. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
2. ASTM A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
3. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
4. ASTM D1037 - Standard Test Methods for Evaluating Properties of Wood Base Fiber and Particle Panel Materials.
5. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
6. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

E. Decorative Hardwoods Association:

1. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood.

F. Forest Stewardship Council:

1. FSC Guidelines - Forest Stewardship Council Guidelines.

G. Green Seal:

1. GS-11 - Product Specific Environmental Requirements.
2. GS-36 - Aerosol Adhesives.

H. National Electrical Manufacturers Association:

1. NEMA LD 3 - High-Pressure Decorative Laminates.

I. National Fire Protection Association:

1. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

J. U.S. Department of Commerce National Institute of Standards and Technology:

1. DOC PS 20 - American Softwood Lumber Standard.

K. Window and Door Manufacturers Association:

1. WDMA I.S.4 - Water-Repellent Treatment for Millwork.

1.3 PREINSTALLATION MEETINGS

A. Section 013000 - Administrative Requirements: Requirements for preinstallation meeting.

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals, including AWS Section 1.

B. Product Data: Submit data on:

1. Fire-retardant treatment materials and application instructions.
2. High-pressure decorative laminates.
3. Hardware accessories.

C. Shop Drawings:

1. Indicate materials, component profiles and elevations, assembly methods, joint details, fastening methods, accessory listings, hardware location, schedule of finishes, and Certified Compliance Label on each set.

D. Samples:

1. Submit a 8 x 10 in sample, illustrating cabinet finish.
2. Submit a 8 x 10 in samples, illustrating countertop.
3. Submit one samples of drawer pulls and hinges, illustrating hardware finish.

E. Delegated Design Submittals: Submit signed and sealed Shop Drawings with design calculations and assumptions for stairs, handrails, and balusters under direct supervision of licensed professional.

F. Qualification Statements:

1. Submit qualifications for fabricator.

1.5 QUALITY ASSURANCE

A. Perform Work according to AWS, Section 6, Section 7, Section 10, and Section 11

B. Surface Burning Characteristics:
1. Maximum **25/450** flame-spread/smoke-developed index when tested according to ASTM E84.
2. Comply with the following when tested according to NFPA 286.
    a. During 40 kW Exposure: No flame spread to ceiling.
    b. During 160 kW Exposure: No flame spread to perimeter of tested sample and no flashover.
    c. Total Smoke Release: Maximum 1 000 cu m.

C. Apply label from agency approved by authority having jurisdiction to identify each fire-retardant-treated and preservative-treated material.

D. Perform Work according to State of Alabama Department of Transportation, or other agency as appropriate. standards.

E. Maintain **1 copy** of each standard affecting the Work of this Section on Project Site.

1.6 QUALIFICATIONS

A. Fabricator:
1. Company specializing in fabricating products specified in this Section with experience similar to this Project.
2. Authorized to provide Woodwork Institute Certified Compliance Certificate

1.7 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Protect units from moisture damage.

1.8 AMBIENT CONDITIONS

A. Section 015000 - Temporary Facilities and Controls: Requirements for ambient conditions control facilities for product storage and installation.

B. Maintain storage space relative humidity within ranges indicated in AWS Section 2.

C. Subsequent Conditions: Maintain same temperature and humidity conditions in building spaces as will occur after occupancy during and after installation of Work of this Section.

1.9 EXISTING CONDITIONS

A. Field Measurements: Verify field measurements prior to fabrication. Indicate field measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 CUSTOM CASEWORK

A. Substitutions: Section 016000 - Product Requirements.

B. Stained-Finished Custom Casework:

1. **Frameless** construction.
2. Style: **Flush inset**.
3. **AWS Section 10.**
4. **Cabinet grade**.
5. Exterior and Interior Exposed Surfaces: **Softwood** lumber and plywood.
6. Semi-Exposed Surfaces: **Softwood lumber and plywood**
7. Door and Drawer Matching: **Non-sequenced**.
   a. Decorative overlay plywood.

C. Plastic-Laminate-Finished Custom Casework:

1. **Frameless** construction.
2. Style: **Flush inset**.
3. **AWS Section 10.**
4. **Custom grade**
5. Exterior and Interior Exposed Surfaces: High-pressure decorative laminate over **particleboar**d or **medium density fiberboard**.
6. Semi-Exposed Surfaces: **High-pressure decorative laminate over particleboard** or **High-pressure decorative laminate over medium density fiberboard**.

D. Casework Construction Details:

1. Drawer Side Joinery: **Lock jointed**.
2. Drawer and Door Edge Profile: **Square with thin, applied band**.
3. Toe Base Finish: **Stained Wood**.
4. Grain Direction: **Vertical**.

2.2 INTERIOR FINISH CARPENTRY

A. Substitutions: **Not permitted**.

B. Interior Standing and Running Trim: **Softwood lumber**.

1. Profile: **Sizes and profiles as indicated on Drawings**.
2. Opaque-Finished Trim: AWS Section 6; **custom** grade.
3. Transparent-Finished Trim: AWS Section 6; **custom** grade.

C. Interior Door Frames: **FRP**

1. Profile: **Sizes and profiles as indicated on Drawings**.

D. Shelving: **Hardwood lumber** and **Softwood plywood**

1. Wood Cleats: 3/4 by 3-1/2 in (19 by 89 mm) where clothes rods are indicated.
2. Opaque-Finished Shelving: AWS Section 6; **custom** grade.
3. Transparent-Finished Shelving: AWS Section 6; **custom** grade.
4. High-Pressure Decorative Laminate Finished Shelving: AWS **economy** grade.

E. Performance and Design Criteria:

2.3 CASEWORK MATERIALS

A. Softwood Lumber: Yellow Pine.

1. Cut: Plain sawn.

B. Lumber Moisture Content Range: 8 to 13 percent.

C. Softwood Plywood: APA/EWA PS 1 and HPVA HP-1; veneer core; yellow pine face species.

1. Veneer Slicing: Vertical grain.
2. Matching of Individual Leaves to Each Other: Random matching.
3. Matching Across Panel Face: Running matching.
4. Matching or Relationship of Panels to Each Other: Sequence-matched, uniform-size sets matching.

D. Particleboard: ANSI A208.1 Grade M2 or better; composed of wood chips or sawdust, medium density.

1. Fire-Retardant Particleboard: ASTM E84; 25 maximum flame-spread index and 450 maximum smoke-developed index.

E. Medium-Density Fiberboard: ANSI A208.2, composed of wood fibers, medium density.

1. Fire-Retardant Fiberboard: ASTM E84; 25 maximum flame-spread index and 450 maximum smoke-developed index.

F. Medium-Density Overlay: APA/EWA PS 1; softwood plywood, exterior type, with paper face suitable for opaque finish.

G. High-Pressure Decorative Laminate (HPDL): NEMA LD 3; as selected.

1. Horizontal Surfaces: HGS; 0.048 in (1.2 mm) thick
2. Vertical Surfaces: VGS; 0.028 in (0.7 mm) thick
3. Post-Formed Surfaces: HGP; 0.039 in (1.0 mm) thick
4. Fire-Resistant Surfaces: HGF; 0.048 in (1.2 mm) thick.
5. Cabinet Liner: CLS; 0.020 in (0.5 mm) thick.
6. Backing Sheet: BKL; 0.020 in (0.5 mm) thick.

2.4 INTERIOR FINISH CARPENTRY MATERIALS

A. Interior Softwood Lumber: **yellow pine** species.

1. Cut: **Plain sawn**.
2. Finger Jointing: **Not permitted**.

B. Lumber Moisture Content Range: **8 to 13** percent.

C. Interior Softwood Plywood: APA/EWA PS 1 and HPVA HP-1; veneer core; yellow pine face species.

1. Veneer Slicing: Vertical grain.
2. Matching of Individual Leaves to Each Other: Rando matching.
3. Matching Across Panel Face: Running matching.
4. Matching or Relationship of Panels to Each Other: Sequence-matched, uniform-size sets matching.

D. Interior Hardwood Plywood: HPVA HP-1; veneer core; yellow pine face species.

1. Veneer Slicing: Plain
2. Matching of Individual Leaves to Each Other: Random matching.
3. Matching Across Panel Face: Running matching.
4. Matching or Relationship of Panels to Each Other: Sequence-matched, uniform-size sets matching.

E. High-Pressure Decorative Laminate (HPDL): NEMA LD 3, color, as selected.

1. Horizontal Surfaces: HGS; 0.048 in (1.2 mm) thick
2. Vertical Surfaces: VGS; 0.028 in (0.7 mm) thick
3. Fire-Resistant Surfaces: HGF; 0.048 in (1.2 mm) thick.
4. Backing Sheet: BKL; 0.020 in (0.5 mm) thick.

F. Prefinished Paneling: yellow pine face species, plain cut, vertical grain, V-cut vertical joint scoring]; 1/4 in ([6] < mm) thick, finished as satin.

2.5 WOOD TREATMENT

A. Fire-Retardant Treatment: Chemically treated and pressure impregnated, having flame spread of 25 or less when tested according to ASTM E 84 and showing no evidence of significant progressive combustion when test is continued for an additional 20-minute period, [interior] [exterior] type.

B. Provide identification on fire-retardant-treated material.

C. Deliver fire-retardant-treated materials cut to required sizes. Minimize field cutting.

D. Moisture Content after Treatment: Redried

1. Lumber: As specified for exterior and interior lumber.
2. Plywood: Maximum 15 percent.

2.6 FABRICATION

A. Fabricate interior finish carpentry to AWS Section 6 custom grade.

B. Fabricate casework to AWS Section 10 custom grade.

C. Fabricate countertops to AWS Section 11 economy grade.

D. Shop-assemble casework for delivery to Site in units easily handled and to permit passage through building openings.

E. Fit exposed plywood edges with matching veneer edging. Use one piece for full length only.

F. Cap exposed high-pressure decorative laminate finish edges with material of same finish and pattern.

G. Door and Drawer Fronts: 3/4 in ([19] mm) thick.

H. When necessary to cut and fit on Project Site, fabricate materials with ample allowance for cutting. Furnish trim for scribing and Site cutting.
   1. Apply high-pressure decorative laminate finish in full, uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Locate plastic laminate joints minimum 18 in (450 mm) from sink cutouts
   2. Apply wood laminate by grain matching adjacent sheets to end matching.

I. Apply laminate backing sheet to reverse side of plastic laminate-finished surfaces where required by AWS for specified grade.

J. Fabricate cabinets and countertops with cutouts for plumbing, fixtures, inserts, appliances, outlet boxes, fixtures and fittings. Verify locations of cutouts from Site dimensions. [Seal] cut edges.

K. Shop-glaze glass materials using interior combination method as specified in Section 088000 - Glazing.

2.7 FINISHES

A. Sand Work smooth and set exposed nails **and screws**.

B. Apply wood filler in exposed nail **and screw** indentations.

C. On items to receive transparent finishes, use wood filler matching surrounding surfaces and types recommended for applied finishes.

D. Finish Work according to AWS Section 5; **stained transparent** type:
   1. System 11; catalyzed polyurethane.

E. **Stain** and **Seal** and varnish exposed-to-view surfaces. **Spray**-apply only.

F. Seal**, stain,** and varnish internal exposed-to-view **and semi-concealed** surfaces.

G. Seal internal surfaces of **cabinet** with **one coat** of **shellac**.

H. **Seal** surfaces in contact with cementitious materials.

I. Finish according to Section 099000 - Painting and Coating.

2.8 ACCESSORIES

A. Adhesive for High-Pressure Decorative Laminates: Type recommended by laminate manufacturer to suit application.

B. Fasteners and Anchors:

1. Fasteners: ASTM A153 (A153M), hot-dip galvanized steel for high-humidity and treated wood locations, unfinished steel elsewhere.
2. Nails and Staples: ASTM F1667.

C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; zinc finish in concealed locations and bronze finish in exposed locations.

D. Concealed Joint Fasteners: Threaded steel.

E. Veneer Edge Band: AWS; standard wood veneer edge band matching face veneer.

F. Glass: As specified in Section 088000 - Glazing.

G. Safety Glass fully tempered, 1/4 in (<6> mm) thick minimum.

H. Grommets: Plastic material for cutouts.

I. Hardware: BHMA A156.9.

J. Shelf Rests:
1. In-line bored holes 1 in (25 mm) o.c., to within 6 in (150 mm) of top and bottom of opening with four support pins for each shelf.

K. Hardware: BHMA A156.9

1. Shelf Standards: black finish.

L. Shelf Brackets: Formed steel brackets, formed for attachment with lugs; satin finish.
1. Standard metal shelf pin
2. Drilling Diameter: ¼”
3. Projection: ½“
4. Load Capacity: 176 lbs
5. Shelf Thickness: minimum ½”

M. Drawer and Door Pulls:
1. Richelieu Basis of Design
   a. Contemporary Aluminum Edge Pull 9595
   b. Finish: Matte Black
   c. Dimensions: 5 1/32” center to center, 5 13/16” length
   d. ADA

N. Sliding Glass Door Systems:
1. Richelieu BP 15510 Basis of Design

a. Door Thickness: ¼”
b. Finish: Satin Aluminum
c. Top and Bottom E-Tracks
d. Silencer Insert
e. End Cap
    1) Zamak
f. U-Spine
    1) Plastic
g. Trolley
h. Glass H-Rail
i. Handle
j. Lock with No. 1 Identical Keys

O. Cabinet Locks: Keyed cylinder, two keys for each lock, master keyed, bronze with satin finish.

P. Catches: Magnetic
1. Richelieu Basis of Design
    a. BP 52090
    b. Finish: black
    c. Dimensions: 1 5/8” width (1 ¼” center to center), ¾” depth, ½” height
    d. Plate and screws

Q. Drawer Slides: Self-closing, stainless steel construction, ball bearings separating tracks, rail mounted full extension type.
1. Richelieu Basis of Design
    a. Brand: Sugatsune 4513SC17016
    b. Length: 16”
    c. Soft-close system ensures smooth, silent closing, with no more slamming drawer.
    d. Hold-in detent keeps the slide closed until force is applied.
    e. Positive stop: stops the drawer in the open position, but does not lock or snap

R. Hinges: Concealed knuckle disappearing type, bronze with satin finish
1. Richelieu Basis of Design
    a. Type: Traditional Steel Hinge 3180
    b. Finish: Matte Black
    c. Finial Style: Ball
    d. Dimensions: 2.5” length, 1.7” width, 2.8” projection
    e. Wood screws

S. Bar Counter Lift Assist Damper
1. Richelieu Basis of Design
    a. Brand: Sugatsune Basis of Design
    b. Material: ABS/Polyacetal/Steel/Zinc Alloy
    c. Stopper – holds panels at 95° to prevent over-rotation
    d. Soft Close: prevents slamming shut
    e. Surface-mounted: allows retrofit into existing countertop passages

T. Sliding Door Track Assemblies: Galvanized steel construction, ball bearing carriers fitted within tracks, multiple pendant suspension attachments for door

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify adequacy of backing and support framing.

C. Verify location and sizes of utility rough-in associated with Work of this Section.

3.2 PREPARATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.

B. Prime paint surfaces of woodwork items and assemblies to be in contact with cementitious materials.

3.3 INSTALLATION

A. Install interior finish carpentry according to AWS Section 6 custom grade.

B. Install casework according to AWS Section 10 custom grade.

C. Install countertops according to AWS Section 11 custom grade.

D. Set and secure casework, interior finish carpentry, and countertops in place; rigid, plumb, and level.

E. Use fixture attachments in concealed locations for wall-mounted components.

F. Use concealed joint fasteners to align and secure adjoining cabinet units and woodwork.

G. Carefully scribe casework abutting other components, with maximum gaps of 1/32 in ([0.7] mm). Do not use additional overlay trim for this purpose.

H. Secure woodwork cabinet and counter bases to floor using appropriate angles and anchorages.

I. Countersink anchorage devices at exposed locations.
   1. Conceal with solid wood plugs of species to match surrounding wood;
   2. Finish flush with surrounding surfaces.

J. Site glaze glass materials using interior combination method specified in Section 088000 - Glazing

K. Install prefinished paneling with:
   1. Nails or Wall adhesive by bead method

3.4 TOLERANCES

A. Section 014000 - Quality Requirements: Requirements for tolerances.

B. Conform to AWS Sections 6 and 10 requirements for the following:

1. Smoothness.
2. Gaps.
3. Flushness.
4. Flatness.
5. Alignment.

C. Maximum Variation from Indicated Position:1/16 in ([1.5] mm).

D. Maximum Offset from Alignment with Abutting Materials: 1/32 in ([0.7] mm).

3.5 ADJUSTING

A. Section 017000 - Execution and Closeout Requirements: Requirements for starting and adjusting.

B. Adjust moving or operating parts to function smoothly and correctly.

3.6 CLEANING

A. Section 017000 - Execution and Closeout Requirements: Requirements for cleaning.

B. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION 06 41 13

SECTION 064660 - PLASTIC FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the Plastic Fabrication as shown and specified in the described system(s):
   1. Light Box with translucent Resin Panel
   2. Bracket Supported Wall Panels

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's product data; include product description, fabrication information, and compliance with specified performance requirements.

B. Submit product test reports from a qualified independent 3rd party testing agency indicating each type and class of panel system complies with the project performance requirements, based on comprehensive testing of current products. Previously completed test reports will be acceptable if for current manufacturer and indicative of products used on this project.
   1. Test reports required are:
      a. Rate of Burning (ASTM D 635)
      b. Self-Ignition Temperature (ASTM D 1929)
      c. Density of Smoke (ASTM D 2843)
      d. Flame spread and Smoke developed testing (ASTM E 84)
      e. Room Corner Burn Test (NFPA 286)
      f. Extent of Burning (UL 94)
      g. Impact strength (ASTM D 3763)
      h. Safety glazing impact resistance (ANSI Z97.1-2004)
      i. UPITT Test for Combustion Product Toxicity
      j. Dynamic environmental testing (ASTM standards D 5116 and D 6670)

C. Shop Drawings: Include plans, elevations, sections, panel dimensions, details, and attachments to other work.

D. Samples for Initial Selection:
   1. Submit minimum 7-inch by 7-inch samples. Indicate full color, texture and pattern variation.

E. Maintenance Data: Submit manufacturer's care and maintenance data, including care, repair and cleaning instructions. Include in Project closeout documents.

1.4 QUALITY ASSURANCE

A. Manufacturers Qualifications

1. Materials and systems shall be manufactured by a company continuously and regularly employed in the manufacture of specified materials for a period of at least five (5) consecutive years and which can show evidence of those materials being satisfactorily used on at least six (6) projects of similar size, scope and location. At least three (3) of the projects shall have been successful for use five (5) years or longer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver Plastic Fabrications, systems and specified items in manufacturer's standard protective packaging.

B. Do not deliver Plastic Fabrications, system, components and accessories to Project site until areas are ready for installation.

C. Store materials in a flat orientation in a dry place that is not exposed to exterior elements.

1. Store curved elements in accordance with manufacturer's recommendations.

D. Handle materials to prevent damage to finished surfaces. Provide protective coverings to prevent damage or staining following installation for duration of project.

E. Before installing Plastic Fabrications, permit them to reach room temperature.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install Solid Polymer Fabrications until ambient temperatures and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.7 WARRANTY

A. Manufacturer's Special Warranty on Plastic Fabrications: Manufacturer's standard form agreeing to repair or replace units that fail in material or workmanship within the specified warranty period.

B. Warranty Period: 1 year after the date of substantial completion.

C. The warranty shall not deprive the owner of other rights or remedies the Owner may have under other provisions of the Contract Documents, and is in addition to and runs concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Manufacturer: 3form, Inc., Salt Lake City, Utah, USA / telephone 801-649-2500

B. Varia™ produced from ecoresin™ Sheet

1. Engineered polyester resin
2. Sheet Size: Maximum 4' x 10'
3. Thickness: As indicated on drawings
4. Product: The design of Plastic Fabrications is based on Varia™ produced with ecoresin™ as provided by 3form, Inc.

C. Interlayer Materials: Compatible with polyesters and bonding process to create a monolithic

sheet of material when complete.

D. Sheet minimum performance attributes:

1. Rate of Burning (ASTM D 635). Material must attain CC1 Rating for a nominal thickness of 1.5 mm (0.060 in.) and greater.
2. Self-Ignition Temperature (ASTM D 1929). Material must have a Self-ignition temperature greater than 650°F.
3. Density of Smoke (ASTM D 2843). Material must have a smoke density less than 75%.
4. Flame spread and Smoke developed testing (ASTM E 84). Material must be able to meet a level of Class A (Flame spread less than 25 and smoke less than 450) at thickness of 1".
5. Room Corner Burn Test (NFPA 286). Material must meet Class A criteria at ¼" thickness as described by the 2003 *International Building Code*.
6. Extent of Burning (UL 94). Must submit UL card.
7. Impact strength. Minimum impact strength test as measured by ASTM D 3763 of 20 ft. lbs. (for durability, shipping, installation, and use).
8. Safety Glazing. Material must attain a Class A impact rating in accordance with ANSI Z97.1-2004 at 1/8" thickness.
9. UPITT Test for Combustion Product Toxicity: Product must be recorded as "not more toxic than wood".
10. Dynamic environmental testing (ASTM standards D 5116 and D 6670). Panels must not have detectable VOC off-gassing agents and must be have Greenguard™ Indoor Air Quality certified.

2.2 BRACKETS

A. Product: As identified on the Drawings.

2.3 LIGHT BOX

A. Manufacturer: 3form, Inc., Salt Lake City, Utah, USA / telephone 801-649-2500

B. 3form Light Box ^{TM}: Aluminum framed LED edge-light carrying panel to back light a translucent panel with dimming capability.

2.4 FABRICATION

A. General: Fabricate Plastic Fabrications to designs, sizes and thicknesses indicated and to comply with indicated standards. Sizes, profiles and other characteristics are indicated on the drawings.

1. Polish all exposed edges and radius outside corners where indicated. Ease all exposed edges 1/32 inch.
2.

B. Comply with manufacturer's written recommendations and the following for fabrication:

1. Polish all exposed edges and radius outside corners where indicated.
2. Ease all exposed edges 1/32 inch.
3. Oversize hole diameter for material penetrating through plastic by 1/8 inch.

C. Machining: Acceptable means of machining are listed below. Ensure that material is not chipped or warped by machining operations.

1. Sawing: Select equipment and blades suitable for type of cut required.
2. Drilling: Drills specifically designed for use with plastic products.
3. Milling: Climb cut where possible.
4. Routing
5. Tapping

D. Forming: Form products to shapes indicated using the appropriate method listed below. Comply with manufacturer's written instructions.

1. Cold Bending
2. Hot Bending
3. Thermoforming: Acceptable only on uncoated material.
4. Drape Forming
5. Matched Mold Forming
6. Mechanical Forming

2.5 MISCELLANEOUS MATERIALS

A. General: Provide products of material, size, and shape required for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaner: Type recommended by manufacturer.

C. Fasteners: Use fasteners appropriate to the application and as approved by the manufacturer.

D. Bonding Cements: May be achieved with solvents or adhesives, suitable for use with product and application.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where installation of Plastic Fabrications will occur, with Installer present, for compliance with manufacturer's requirements. Verify that substrates and conditions are satisfactory for installation and comply with requirements specified.

3.2 INSTALLATION

A. General: Comply with manufacturer's written instructions for the installation of Plastic Fabrications.

B. Manufacturer's shop to fabricate items to the greatest degree possible.

C. Utilize fasteners, adhesives and bonding agents recommended by manufacturer for type of installation indicated. Material that is chipped, warped, hazed or discolored as a result of installation or fabrication methods shall be replaced.

D. Install components plumb, level and rigid, in accordance with approved shop drawings and product data.

E. Form field joints using manufacturer's recommended procedures. Locate seams in panels so

that they are not directly in line with seams in substrates.

3.3 BRACKET SUPPORTED PANELS

A. Install panels using mounting brackets indicated. Secure mounting brackets to top of wall. Shim between bracket and plastic fabrication with resilient material recommended by the manufacturer and to provide even bearing of plastic panel across each bracket.

B. Shim and oversize hole in plastic fabrication shall be such that the plastic fabrication is not supported on and does not touch the penetrating anchor of the bracket.

C. Polish and ease edges and radius corners as indicated.

3.4 ALUMINUM FRAMED PANELS

A. Install panel in aluminum framing in accordance with manufacturer's recommendations.

B. Secure framing to floor, wall and ceiling structure using ¼ inch diameter anchors appropriated to the construction and at not more than 16 inches oc.

3.5 TOP SUPPORTED WALL PANELS

A. Install panel in aluminum top support trim in accordance with manufacturer's recommendations.

B. Secure support trim to ceiling structure using ¼ inch diameter anchors appropriated to the construction and at not more than 16 inches oc.

C. Polish and ease edge exposed edges.

3.6 CLEANING AND PROTECTION

A. Protect surfaces from damage until date of substantial completion. Repair work or replace damaged work, which cannot be repaired to Architect's satisfaction.

END OF SECTION

SECTION 07 21 00

THERMAL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Extruded polystyrene foam-plastic board.
2. Molded polystyrene foam-plastic board.
3. Polyisocyanurate foam-plastic board.
4. Glass-fiber blanket – Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.
5. Glass-fiber board insulation at cavity wall construction.
6. Spray-applied cellulosic insulation.

B. Related Requirements:

1. Section 061600 "Sheathing" for foam-plastic board sheathing installed directly over wood or steel framing.
2. [**Section 071300 "Sheet Waterproofing"**] for insulated drainage panels installed with plaza deck insulation.
3. Section 072129 "Sprayed Cellulose Thermal Insulation" for spray-applied cellulose foam insulation.
4. Section 072200 "Roof Deck and Insulation" for Rigid Faced Polyisocyanurate roof insulation over the properly prepared deck substrate.
5. [**Section 092900 "Gypsum Board"**] for sound attenuation blanket used as acoustic insulation.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
1. Include product characteristics, performance criteria, and product limitations.

1.4 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each product, for tests performed by a qualified testing agency.

B. Evaluation Reports: For foam-plastic insulation, from ICC-ES.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

B. Protect foam-plastic board insulation as follows:

1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site until just before installation time.
3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.
4. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 - PRODUCTS

2.1 POLYISOCYANURATE FOAM-PLASTIC BOARD

A. Polyisocyanurate Board, Glass-Fiber-Mat Faced: ASTM C 1289, glass-fiber-mat faced, Type II, Class 1 or 2.

1. <Manufacturers and Products:>
   a. ENRGY-3; Johns Manville
   b. Hytherm; Dow
   c. EnergyGuard; GAF
   d. Approved Equivalent

B. Extruded polystyrene board; Type ASTM C578; with either natural skin or cut cell surfaces, and the following characteristics:

1. Compliances: UL, WH or FM listed under Roofing Systems
2. Federal Specification: HH-I-1972.
3. Qualities: Rigid, closed cell polyisocyanurate foam core bonded to felt or glass heavy duty fiber mat facers.
4. R-value: 1 inch of material at 72 degrees F; 4.1, minimum – refer to drawings.
5. Board Edges: Square.
6. Compressive Resistance: 25 psi.

7. Board Density: 1.3 lb/cu ft.
8. Water Absorption, Maximum: 0.3 percent, by volume.

C. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

1. Complies with fire resistance requirements shown on the drawings as part of an exterior non-load-bearing exterior wall assembly when tested in accordance with NFPA 285
   a. Flame Spread Index: 75 or less, when tested in accordance with ASTM E84.
   b. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.

2.2 GLASS-FIBER BLANKET

A. Glass-Fiber Blanket, Unfaced: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

1. <Manufacturers and Products:>
   a. CertainTeed Corporation: www.certainteed.com.
   b. Johns Manville: www.jm.com.
   c. Owens Corning Corp: www.owenscorning.com.

B. Glass Fiber Batt Insulation: Flexible preformed batt or blanket, complying with ASTM C665; friction fit.
1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
4. Formaldehyde Content: Zero.
5. Thickness: As indicated on Construction Documents.
6. Substitutions: See Section 016000 - Product Requirements.

2.3 MINERAL-WOOL BLANKETS

A. Mineral-Wool Blanket, Unfaced: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

1. <Manufacturers and Products:>
   a. Johns Manville; MinWool Sound Attenuation Fire Batts: www.jm.com.
   b. Thermafiber, Inc.; SAFB: www.thermafiber.com.
   c. ROXUL, Inc; ComfortBatt: www.roxul.com.

2.4 SPRAY-APPLIED CELLULOSIC INSULATION

A. Self-Supported, Spray-Applied Cellulosic Insulation: ASTM C 1149, [**Type I (materials applied with liquid adhesive; suitable for either exposed or enclosed applications),**] chemically treated for flame-resistance, processing, and handling characteristics.

1. <Manufacturers and Products:>
   a. International Cellulose Corporation
      12315 Robin Boulevard, Houston, Texas 77045
      (713) 433-6701 or (800) 444-1252
      www.spray-on.com and icc@spray-on.com
   b. For approved applicators contact ICC at 800-444-1252

2.5 INSULATION FASTENERS

A. General: Impaling clip of unfinished steel with washer retainer and clips, to be adhered to surface to receive insulation, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.

B. Adhesively Attached, Spindle-Type Anchors: Plate welded to projecting spindle; capable of holding insulation of specified thickness securely in position with self-locking washer in place.

1. Plate: Perforated, galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
2. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch in diameter; length to suit depth of insulation.

C. Adhesively Attached, Angle-Shaped, Spindle-Type Anchors: Angle welded to projecting spindle; capable of holding insulation of specified thickness securely in position with self-locking washer in place.

1. Intended for attaching insulation to mullions while preventing it from touching spandrel glass
2. Angle: Formed from 0.030-inch- thick, perforated, galvanized carbon-steel sheet with each leg 2 inches square.
3. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch in diameter; length to suit depth of insulation.
4. If stainless steel or another metal is used, “Angle” and “Spindle” requirements are different from those listed above.

D. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch- thick galvanized-steel sheet, with beveled edge for increased stiffness, sized as required to hold insulation securely in place, but not less than 1-1/2 inches square or in diameter.

1. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in the following locations:

   a. Crawl spaces.
   b. Ceiling plenums.
   c. Attic spaces.
   d. <Where sharp ends of spindles would be exposed to human contact>.

E. Insulation Standoff: Spacer fabricated from galvanized mild-steel sheet for fitting over spindle of insulation anchor to maintain air space between face of insulation and substrate to which anchor is attached.

F. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates without damaging insulation, fasteners, or substrates.

2.6 ACCESSORIES

A. Insulation for Miscellaneous Voids:

1. For enhanced thermal protection or air-infiltration reduction.
2. Glass-Fiber Insulation: ASTM C 764, Type II, loose fill; with maximum flame-spread and smoke-developed indexes of 5, per ASTM E 84.
3. Spray Polyurethane Foam Insulation: ASTM C 1029, Type II, closed cell, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E 84.

B. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.
1. Type recommended by insulation manufacturer for application.

C. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inch wide.
1. Tape joints of rigid insulation in accordance with roofing and insulation manufacturers' instructions.

D. Eave Ventilation Troughs: Preformed, rigid fiberboard or plastic sheets designed and sized to fit between roof framing members and to provide ventilation between insulated attic spaces and vented eaves.

1. For vented eaves in attics to receive blanket insulation.

E. Protection Board for Below Grade Insulation: Cementitious, 1/4 inch thick.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.

B. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

C. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.2 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

3.3 INSTALLATION OF SLAB INSULATION

A. On vertical slab edge and foundation surfaces, set insulation units using manufacturer's recommended adhesive according to manufacturer's written instructions.

1. If not otherwise indicated, extend insulation a minimum of [**24 inches**] below exterior grade line.

B. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.

1. If not otherwise indicated, extend insulation a minimum of [**24 inches**] in from exterior walls.

3.4 INSTALLATION OF FOUNDATION WALL INSULATION

A. Butt panels together for tight fit.

B. Anchor Installation: Install board insulation on concrete substrates by adhesively attached, spindle-type insulation anchors as follows:

1. Fasten insulation anchors to concrete substrates with insulation anchor adhesive according to anchor manufacturer's written instructions. Space anchors according to insulation manufacturer's written instructions for insulation type, thickness, and application.
2. Apply insulation standoffs to each spindle to create cavity width indicated on Drawings between concrete substrate and insulation.
3. After adhesive has dried, install board insulation by pressing insulation into position over spindles and securing it tightly in place with insulation-retaining washers, taking care not to compress insulation.
4. Where insulation will not be covered by other building materials, apply capped washers to tips of spindles.

C. Adhesive Installation: Install with adhesive or press into tacky waterproofing or dampproofing according to manufacturer's written instructions.

1. Apply adhesive to back of boards:
   a. Three continuous beads per board length.

2. Install boards horizontally on foundation perimeter.
   a. Place boards to maximize adhesive contact.
   b. Install in running bond pattern.
   c. Butt edges and ends tightly to adjacent boards and to protrusions.

3. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
4. Immediately following application of board insulation, place protective boards over exposed insulation surfaces.
   a. Apply adhesive in five continuous beads per board length.
   b. Install boards horizontally from base of foundation to top of insulation.
   c. Butt boards tightly, with joints staggered from insulation joints.

3.5 INSTALLATION OF CAVITY-WALL INSULATION

A. Foam-Plastic Board Insulation: Install pads of adhesive spaced approximately 24 inches o.c. both ways on inside face and as recommended by manufacturer. Fit courses of insulation between wall ties and other obstructions, with edges butted tightly in both directions. Press units firmly against inside substrates.

1. Supplement adhesive attachment of insulation by securing boards with two-piece wall ties designed for this purpose and specified in Section 042000 "Unit Masonry."
   a. For when insulation does not fill cavity.

B. Install boards to fit snugly between wall ties.

1. Place membrane surface against adhesive.
2. Place membrane surface facing out, and tape seal board joints.

C. Install boards horizontally on walls.

1. Place boards to maximize adhesive contact.
2. Install in running bond pattern.
3. Butt edges and ends tightly to adjacent boards and to protrusions.
4. Place impale fastener locking discs.

D. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.6 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

A. Batt Installation in General
1. Coordinate work of this section with requirements for vapor retarder specified in Section 072500.
2. Coordinate work of this section with construction of air barrier seal specified in Section 072500.

B. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:

1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends. Trim insulation neatly to fit spaces.
2. Insulate miscellaneous gaps and voids. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
3. Maintain 3-inch clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
4. Attics: Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
5. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.
6. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
7. For wood-framed construction, install blankets according to ASTM C 1320 and as follows:
    a. With faced blankets having stapling flanges, lap blanket flange over flange of adjacent blanket to maintain continuity of vapor retarder once finish material is installed over it.

8. Vapor-Retarder-Faced Blankets: Tape joints and ruptures in vapor-retarder facings and seal each continuous area of insulation to ensure airtight installation.
    a. Exterior Walls: Set units with facing placed toward [**as indicated on Drawings**] based on vapor-flow analysis of the construction assembly.
    b. Interior Walls: Set units with facing placed [**toward areas of high humidity**] for all interior walls around high-humidity areas such as shower rooms.

C. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:

1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft..
2. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

D. Spray-Applied Cellulosic Insulation: Apply spray-applied insulation according to manufacturer's written instructions. Do not apply insulation until installation of pipes, ducts, conduits, wiring, and electrical outlets in walls is completed and windows, electrical boxes, and other items not indicated to receive insulation are masked. After insulation is applied, make flush with face of studs by using method recommended by insulation manufacturer.

3.7 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 07 21 00

072650 – UNDERSLAB VAPOR PROTECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Description of Scope and Intent:
1. CONTRACTOR shall provide all material, labor, and tools required to complete the installation of specified system.
2. Any omission of reference to items required to complete the full operational and functional system specified in the section does not relieve the CONTRACTOR of the obligation to provide same.
3. To provide installation of all items, including delivery, dispersing to the proper locations within the building, and affixing in place.
4. Installation shall be accomplished by workers skilled in their craft that will perform their work in a professional manner and will leave the premises safe, orderly and clean.
5. Drawings and general provisions of Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.
6. CONTRACTOR is responsible for coordination of work included in this specification with all other Specification sections related to furnishing of all materials, labor, permits, fees and services necessary for completion of work in this section.
7. In the event of a conflict between the design Drawings, referenced standards and these Specifications, the more stringent shall govern unless directed otherwise by the ENGINEER. CONTRACTOR shall strictly adhere to OSHA requirements and local codes or those of any regulatory agency or body with jurisdiction.

B. This Section includes integral pre-applied waterproofing membrane and vapor barrier that bonds to poured concrete for use below slabs on grade, installed in direct contact with concrete.

1.02 SUBMITTALS

A. Submit MANUFACTURER’s product data, installation instructions and membrane samples for approval in accordance with Section 01300.

1.03 REFERENCE STANDARDS

A. The following standards and publications are applicable to the extent referenced in the text.

B. American Society for Testing and Materials (ASTM):
1. D 412 – Standard Test Methods for Rubber Properties in Tension
2. D 903 – Standard Test Method for Peel or Stripping Strength of Adhesive Bonds
3. D 3767 – Standard Practice for Rubber - Measurements of Dimensions
4. E 96 – Standard Test Methods for Water Vapor Transmission of Materials

5. E 154 – Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover
6. E 1643 – Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs
7. E 1745 – Plastic Vapor Retarders Used in Contact with Soil or Granular fill under Concrete Slabs

C. American Concrete Institute (ACI) ACI 302.1R-96 Addendum Vapor Retarder Location: For slabs with vapor-sensitive floor coverings, locate retarder in direct contact with the slab (not beneath a layer of granular fill).

1.04 QUALITY ASSURANCE

A. Materials: For each type of material required for the work of this section, provide primary materials that are the products of one manufacturer.

B. Schedule Coordination: Schedule work such that membrane will not be left exposed to weather for longer than that recommended by the MANUFACTURER.

1.05 DELIVERY, STORAGE AND HANDLING

A. Refer to Section 01600. Deliver materials in labeled packages. Store and handle in strict compliance with manufacturer's instructions. Protect from damage from weather, excessive temperature and construction operations. Remove and dispose of damaged material in accordance with applicable regulations.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Basis of Design - Integrally Bonded Vapor Protection: Florprufe™ 120 Membrane by Grace Construction Products, or an equivalent underslab vapor barrier capable of integrally bonding to concrete. The vapor barrier shall be a 0.5 mm (0.021 inch) nominal thickness composite sheet membrane comprising 0.4 mm (0.016 inch) of polyolefin film, and layers of specially formulated synthetic adhesive layers. The membrane shall form an integral and permanent bond to poured concrete to prevent vapor migration at the interface of the membrane and structural concrete.

B. Provide membrane with the following physical properties:

Property	Typical Value	Test Method
Thickness (nominal)	0.5 mm (0.021 inch)	ASTM D3767 Method A
Water Vapor Permeance	0.03 perms	ASTM E96 Method B *
Tensile Strength	68 lb./inch	ASTM E154 *
Elongation	300%	ASTM D412
Puncture Resistance	3300 grams	ASTM D1709 *
Peel Adhesion to Concrete	>4 lb./inch	ASTM D903

* ASTM E 1745 Requirements.

PART 3 - EXECUTION

3.01 EXECUTION

A. The installer shall examine conditions of substrates and other conditions under which this work is to be performed and notify the CONTRACTOR, in writing, of circumstances detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Earth and stone substrates shall be well compacted to produce an even, solid substrate. Remove loose aggregate or sharp protrusions. Concrete substrates shall be smooth or broom finished and monolithic. Remove standing water prior to membrane applications.

B. Place all foundation and slab insulation around slab/foundation perimeter before installation of membrane. Join the entire perimeter edges of the vapor barrier with the waterproof barrier sealing the foundation walls.

C. Installation shall be in accordance with manufacturer's instructions and ASTM E 1643–98, including but not limited to, the following:
   1. Apply membrane with the HDPE film facing the prepared substrate. Remove the release liner during application.
   2. Apply succeeding sheets by overlapping the previous sheet 50-mm (2-inch.) along the marked lap line. End Laps should be staggered to avoid a build up of layers.
      a. Mechanical Fastening – To prevent the membrane from moving and gaps opening, the laps should be fastened together at 39 in maximum centers. Fix through the center of the lap area using 0.5-inch long washer-head self-tapping galvanized screws.
      b. Taped Lap – Use manufacturer's recommended tape to secure and seal the overlaps. Overband the lap with 4-inch wide tape using the lap line for alignment. Remove plastic release liner to ensure bond to concrete.
   3. Mix and apply liquid detailing compound to seal around penetrations such as drainage pipes, etc.

3.03 CONCRETE PLACEMENT

A. Place concrete within 30 days. Inspect membrane and repair any damage with patches of tape. Ensure all liner is removed from membrane and tape before concrete placement.

3.04 SCHEDULE

A. Provide underslab vapor barrier under all building slabs on grade, including the re-pump station building and the sodium hypochlorite structure. Perimeter of underslab vapor barriers shall join the sealant of the foundation.

END OF SECTION 072650

SECTION 07 27 26 FLUID-APPLIED MEMBRANE AIR BARRIERS, VAPOR-PERMEABLE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Fluid-applied. vapor-permeable, membrane air barrier: Materials that form a system to stop passage of air & moisture vapor through exterior walls, joints between exterior walls and roof, and joints around frames of openings in exterior walls.

1.2 RELATED SECTIONS

A. Section 014000 Quality Requirements; coordination with owners' independent testing and inspection agency
B. Section 014339 Mock-Ups; exterior wall mock-ups
C. Section 042200 Reinforced Unit Masonry; Requirements for masonry joints are flush and filled with mortar, removal of excess mortar on brick ties.
D. Section 04113 Brick Veneer Masonry; Requirements for masonry joints are flush and filled with mortar, removal of excess mortar on brick ties.
E. Section 061600 Sheathing for air barrier substrates and joint treatment
F. Section 092900 Gypsum Board
G. Exterior wall claddings

1.3 REFERENCE STANDARDS

A. AAMA- American Architectural Manufactures Association
   1. AAMA 711 Voluntary Specification for Self-Adhering Flashing Products Used for the Installation of Exterior Wall Fenestration Products.
   2. AAMA 714 Voluntary Specification for Liquid Applied Flashing Used to Create a Water Resistive Seal Around Exterior Wall Openings in Buildings
B. ASTM- American Society for testing and Material Standards www.astm.org
   1. ASTM C1177 Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing
   2. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
   3. ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials
   4. ASTM E2178 Standard Test Method for Air Permeance of Building Material
   5. ASTM E2357 Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
   6. ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension
C. Building Codes and Standards
   1. 2015 ICC-ES AC 212 CIC ES Water-resistive Coatings Used as Water-resistive Barriers over Exterior Sheathing

2. 2021, 2018, 2015, and 2009 IBC International Building Code
3. 2021, 2018, 2015, 2012, and 2009 IRC International Residential Code
4. 2021, 2018, 2015, and 2009 IECC International Energy Conservation Code
5. US Environmental Protection Agency's AIM VOC regulations

D. GA - Gypsum Association
   1. GA-253 Application of Gypsum Sheathing
E. NFPA - National Fire Protection Association
   1. NFPA 285 Standard Fire Test Method for Evaluating of Fire Propagation Characteristics of Exterior Wall Assemblies Containing CombustibleComponents
F. US Department of Commerce (DOC)
   1. DOC PS 1 - Structural Plywood
   2. DOC PS 2 - Performance Standard for Wood-Based Structural Panels

1.4 SUBMITTALS

A. Submittals: Submit in accordance with Division 1 requirements.
B. Product Data: Submit manufacturer’s product data including accessory material types, composition, descriptions, and properties.
C. Installation instructions and substrate preparation recommendations.
D. Shop Drawings of Mock-Up; Shop drawings of proposed mock-up(s) including plans, elevations, details, and air barrier transitions.
E. Shop Drawings: Submit shop drawings indicating locations and extent of fluid- applied air barrier membrane system, including details of typical conditions, special joint conditions, intersections with other building envelope systems and materials; counter flashings and details showing bridging of envelope at substrate changes, details of sealing penetrations, and detailed flashing around windows and doors
F. Sample warranty: Submit a sample warranty identifying the terms and conditions of the warranty as herein specified.
G. VOC Regulations: Provide products that meet volatile organic emission standards.
H. Evaluation reports: Accredited laboratory testing for materials

1.5 WARRANTY

A. Provide manufacturer's standard warranty for the fluid-applied air barrier membrane to be free of manufacturing defects that make it unsuitable for its intended use. Warranty period shall be Ten (10) years from the date of installation of the product.

B. Provide manufacturer's standard warranty for use as a drainage plane when the cladding systems are properly designed and installed, with a warrantyperiod of 10 years from the date of installation of the product or.

1.6 QUALITY ASSURANCE- PRECONSTRUCTION CONFERENCE

A. Conduct preconstruction conference onsite at project
B. Review air barrier products and installation requirements
C. Mock-up construction and expectations
D. Testing and inspection requirements
E. Sequencing and coordination of air barrier work with other materials and sections
F. Compatibility of materials that will interface with the primary fluid-applied membrane material and accessories.

1.6 QUALITY ASSURANCE- MATERIAL

A. Air-Barrier Assembly Air Leakage: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft. (0.2 L/s x sq. m of surface area at 75 Pa), when tested according to ASTME 2357.

1.7 QUALITY ASSURANCE - MOCK UP

A. Include examples of surface preparation, detailing of penetration, crack and joint treatment, air barrier application, termination conditions, flashing, transitions to roof and foundation materials, and adjacent materials on actual facility prior to installation throughout

1.8 QUALITY ASSURANCE – REGULATORY COMPLIANCE

A. Comply with US Environmental Protection Agency's AIM VOC regulations
B. Comply with 2015 ICC-ES AC 212 CIC ES Water-resistive Coatings Used as Water-resistive Barriers over Exterior Sheathing
C. Comply with 2021 IRC requirements for continuous air barrier
D. Comply with 2021 air barrier requirements of the IBC and IECC

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver and accept materials to the Project site in original packaging with seals unbroken and label with Manufacturer's name.
B. Protect materials from damage, excessive temperatures, and construction traffic.
C. Store materials in a cool and dry area.
D. Handle materials in accordance with the manufacturer's recommendation,

1.10 FIELD CONDITIONS

A. Temperature: Install the air barrier materials within the range of ambient and substrate temperature recommended by the material manufacturer.

B. Field Conditions: Do not install the air barrier when the temperature of the substrate surface or air temperature are below or above the manufacturer's recommendations.
C. Sequencing: Coordinate installation of the roof assembly to ensure the roof assembly is sufficiently installed to prevent accumulation of water in the interior of the building. Schedule other work requiring interface with the air barrier to ensure proper sequencing.
D. Compatibility. Do not allow air barrier materials to come in contact with chemically incompatible materials.
E. Ultra-violet exposure. Do not expose air barrier materials to sunlight longer than as recommended by the material manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURERS
A. Basis-of-Designs: Provide air barrier products manufactured by Georgia-Pacific Gypsum LLC 1-800-225-6119; email: techservices@gapac.com www.buildgp.com or comparable products approved by the Architect in agreement with Division 1 General Requirements.
B. Source Limitations: Obtain the primary air-barrier materials from a single source manufacturer.

2.2 MATERIALS
A. Primary Air Barrier Material: DensDefy™ Liquid Barrier - single component Silyl-Terminated Polymer (STP) air and water-resistive barrier applied by roller or with spray equipment applied at a minimum of 14 wet mils
B. Air Barrier Accessory Materials
1. Fluid applied flashing for joints, inside and outside corners, material transitions, board to board seams, wall to slab, and penetrations
a. DensDefy™ Liquid Flashing - a waterproofing and detailing compound made with STP Technology
2. Self-Adhering transition membrane for flashing of rough openings, material transitions, and wall to slab
a. DensDefy™ Transition Membrane - 25-mil composite impermeable membrane that is comprised of 16 mils of butyl adhesive and 9 mils of HDPP facer.

2.3 PERFORMANCE
A. Fluid-Applied Membrane Air Barrier Performance
1. Air Performance ASTM E2178; Air Permeance ASTM E2178: ≤0.004 cfm/sg ft of surface area at 1.57-lbf/sq. ft (≤0.02 L/s x sq. m of surface area at 75-Pa)
2. Vapor Performance ASTM E96; Minimum of 14 Perms

3. Tensile Strength of Sandwich Construction ASTM C297: pull strength meeting or exceeding 15 psi.
4. Elongation: ASTM D412 >400% at break
5. Surface Burning Characteristics: ASTM E84; Class A; a flame spread of no greater than 25; smoke development of 10
6. VOC content <30 g/L.
7. Pass Hydrostatic Pressure Test (3-stage) per ICCES AC212
8. Exposed to normal weathering conditions for up to 12 months

B. Fluid Applied Flashing Performance
1. Comply with AAMA 714-19: Voluntary Specification for Liquid-Applied Flashing Used to Create a Water-Resistive Seal Around Exterior Walls in Openings in Buildings

C. Self-Adhering Transition Membrane Performance
1. Comply with AAMA 711: Voluntary Specifications for Self-Adhering Flashing Used for Installation of Exterior Wall Fenestration Products.

PART 3 EXECUTION

3.1 EXAMINATION

A. Before applying the air barrier material ensure the following conditions are met.
1. Verify that the surfaces conditions are suitable prior to commencing installation
2. Concrete Masonry Units (CMU) are in conformance with the applicable building code and masonry joints are flush and filled.
3. Masonry surfaces have cured for the recommended time period by the membrane manufacturer and are free from release and curing agents, excess mortar, or other contaminates.
4. Gypsum Sheathing is installed in accordance with GA-253 and compliance with ASTM C1177
5. Substrates are smooth without large voids or sharp protrusions.

B. Test for capillary moisture by plastic sheet method according to ASTM D4263
C. Verify sealants are compatible with air barrier membrane used.
D. Ensure field conditions are met as outlined in Part 1 – General Requirements.
E. Proceed with air barrier installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

A. Clean, prepare, and treat substrate in accordance with the air barrier manufacturers written instructions

B. Apply treatment to board-to-board seams in sheathing and surface cracks in masonry substrates per the air barrier manufacturers written instructions.
C. Remove all bond inhibiting agents, such as dust, mud, oils, curing compounds or any other substances that might prevent placement and bonding of membrane
D. Fill voids with a substrate patching material
E. Mask or cover adjacent areas to protect from over-spray

3.3 GENERAL INSTALLATION AIR BARRIER MEMBRANE

A. Install fluid-applied air barrier membrane and system accessories to achieve a monolithic, void-free, continuous building envelope.
B. Install fluid-applied air barrier and system accessories in accordance with manufacturer's written instructions.
C. Install fluid-applied membrane using equipment and methods in the air barrier written instructions to achieve required free-film thickness by the manufacturer.

3.4 GENERAL INSTALLATION OF ACCESORY MATERIALS

A. Install accessory materials according to the Air Barrier written instruction to seal and connect air barrier material to adjacent material
B. Transitions: Seal, flash, and connect air barrier material continuously to below-grade structures, roofing membrane, floor-to floor conditions, window and glazing systems including curtain wall and storefront assemblies, door system, and other exterior wall openings.
    1. Self-adhered transition membrane at transitions and rough openings: By the end of each workday, flash all edges of the applied self-adhered membrane with a manufacturer approved liquid flashing. Overlap self-adhere transitional membrane using a shingle lap method and roll-out installed membrane to ensure a secure adhesion to the substrate
C. Penetrations: Seal around all exterior wall penetrations with liquid flashing or manufacture approved sealant to prevent air and water infiltration. For round or square pipe/duct penetrations use specified fluid applied flashing, refer to the air barrier written instructions for proper sealing.

3.5 FIELD QUALITY CONTROL

A. Do not cover installed fluid-applied air barrier membrane assembly until required inspections have been completed and installation has been accepted.
B. Where applicable, allow for owner's inspection and air barrier testing and reporting.
C. If the inspections or testing reveal any deficient application, remediate deficient work promptly

3.6 PROTECTION

A. Protect air barrier membrane assembly from damage during installation and during the construction period.

B. Coordinate to protect air barrier membrane from UV light exposure for a period greater than the acceptable by the air barrier membrane manufacture.
C. Use cleaning agents and procedures recommended by the manufacturer of affected construction to remove spills, stains, and overspray prior to curing.

END OF SECTION

SECTION 07 41 13.16

STANDING-SEAM METAL ROOF PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:

1. Factory-formed and field assembled, standing-seam metal roof panels.
2. Roof insulation

B. Related Sections:
1. Section 079200 “Joint Sealants” for field-applied sealants not otherwise specified in this Section.
2. Section 071326 “Self - Adhering moisture Barrier”,

1.3 DEFINITIONS

A. Metal Roof Panel Assembly: Metal roof panels, attachment system components, miscellaneous metal framing, thermal insulation, and accessories necessary for a complete weathertight roofing system.

B. Solar Flux: Direct and diffuse radiation from the sun received at ground level over the solar spectrum, expressed in watts per square meter.

C. Solar Reflectance: Fraction of solar flux reflected by a surface, expressed as a percent or within the range of 0.00 and 1.00.

1.4 PERFORMANCE REQUIREMENTS

A. General: Provide metal roof panel assemblies that comply with performance requirements specified as determined by testing manufacturers' standard assemblies similar to those indicated for this Project, by a qualified testing and inspecting agency.

B. Air Infiltration: Provide roof panel system not to exceed the following air leakage rates when tested in accordance with ASTM E283;

1. Pressure Leakage Rate
   a. 1.57 PSF 0.0007 cfm/sq.ft.

b. 6.24 PSF 0.0002 cfm/sq.ft.
c. 20.0 PSF 0.0036 cfm/sq.ft.

C. Water Penetration: No water penetration when tested according to ASTM E 331.

D. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift resistance class indicated Shop Drawings.

E. Fire/Windstorm Classification: Class 1A-120.

F. Structural Performance: Provide metal roof panel assemblies capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated, based on testing according to ASTM E 330:

1. Wind Loads: Determine loads based on the following minimum design wind pressures indicated in the Drawings.
2. Uniform pressure as indicated on the Drawings.

G. Thermal Movements: Provide metal roof panel assemblies that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient, material surfaces.

H. Thermal Performance: Provide insulated metal roof panel assemblies with thermal-resistance value (R-value) indicated when tested according to ASTM C 236 or ASTM C 518.

I. Solar Reflectance for Roofs with Slopes Steeper Than 2:12: Initial solar reflectance of not less than 0.25 when tested according to ASTM E 903, and maintained, under normal conditions, solar reflectance not less than 0.15 for 3 years after installation.

1.5 ACTION SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal roof panel and accessory.

B. Shop Drawings:

1. Provided by manufacturer, all sheets on manufacturer’s title block.

2. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

3. Clip spacing fastening patterns for corner, perimeter, and field-of-roof locations.

4. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.

5. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.

6. Scaled Roof Plan showing keyed details, wind zone hatching.

C. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.

1. Metal Roof Panels: 16 inches long by actual panel width. Include fasteners, clips, closures, and other metal roof panel accessories.
2. Trim and Closures: Include fasteners and other exposed accessories.
3. Accessories: Samples for each type of accessory.

D. Field quality-control reports.

E. Sample Warranties: For special warranties.

F. Section 01360 – Manufacturer Warranty Certification

1. Submit manufacturer's signed warranty certification document integrating warranty with project conditions.

G. Copy of Manufacturer's approved contractor letter, specific to this project.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Material Certificates: For thermal insulation, from manufacturer.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels to include in maintenance manuals.

1.8 WARRANTY

1.9 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1. Contractor shall provide copy of manufacturer's certification letter.

2. Installer's responsibilities include fabricating and installing metal roof panel assemblies and providing professional engineering services needed to assume engineering responsibility.
3. Engineering Responsibility: Preparation of data for metal roof panels, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
4. Source Limitations: Obtain each type of metal roof panels through one source from a single manufacturer.
5. Product Options: Drawings indicate size, profiles, and dimensional requirements of metal roof panels and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."
6. Manufacturer shall visit jobsite minimum three days per week and issue progress reports within 3 days of site visit.

B. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of work.

1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another testing and inspecting agency.
2. Surface-Burning Characteristics: Provide insulated metal roof panels having insulation core material with the following surface-burning characteristics as determined by testing identical products per ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

    a. Flame-Spread Index: 25 or less, unless otherwise indicated.
    b. Smoke-Developed Index: 450 or less, unless otherwise indicated.

3. Metal roof panels shall be identified with appropriate markings of applicable testing and inspecting agency.

4. Minimum 15-stage roll forming equipment shall be used to minimize oil canning.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation. Protect strippable protective covering on metal roof panels from exposure to sunlight and high humidity, except to extent necessary for period of metal roof panel installation.

E. Protect foam-plastic insulation as follows:

1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
2. Protect against ignition at all times. Do not deliver foam-plastic insulation materials to Project site before installation time.
3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

1.11 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

B. Field Measurements: Verify locations of roof framing and roof opening dimensions by field measurements before metal roof panel fabrication and indicate measurements on Shop Drawings.

C. Established Dimensions: Where field measurements cannot be made without delaying the Work, either establish framing and opening dimensions and proceed with fabricating metal roof panels without field measurements or allow for field-trimming of panels. Coordinate roof construction to ensure that actual building dimensions, locations of structural members, and openings correspond to established dimensions.

1.12 COORDINATION

A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.

B. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.13 WARRANTY

A. Manufacturer’s System, Labor and Materials, Non-Prorated, Single Source: The manufacturer shall warranty that the roofing system shall remain intact (without perceptible deformation) and leak free for a period of 30-years from the date of project Substantial Completion up to IBC design pressures, with panels repaired or replaced as needed.

1. Structural failures including rupturing, cracking, or puncturing.
2. Deterioration of metals and other materials beyond normal weathering.
3. Manufacturer shall execute a single warranty covering of the following criteria. Multiple-source warranties are not acceptable.
4. Manufacturer's thirty (30) year watertight warranty, including coverage for all trim, flashings, curbs and penetrations associated with the roof area.

5. Warranty shall commence on date of substantial completion [or final payment], whichever is agreed by contract.
6. Installer shall provide manufacturer with a two (2) year warranty covering roofing system installation and water tightness.
7. Warranty shall contain no provisions for “blanket voiding” (permanent cancellation).
8. Warranty shall not charge owner for leak calls for any reason.
9. Warranty shall not require a manufacturer’s maintenance program and only routine maintenance such as cleaning debris shall be necessary.

B. Paint Finish Warranty: 20 years minimum from the date of Substantial Completion.

1. Failures include, but are not limited to, chalking, cracking, deforming, fading or otherwise deteriorating beyond normal weathering, and as otherwise indicated.
2. Fading is defined as loss of color, after cleaning with product recommended by manufacturer, of more than 4 color-difference units as measured according to ASTM D2244, and as otherwise indicated.
3. Chalking is defined as being in excess of a No. 8 rating when tested according to ASTM D 4214.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:

1. Wind Loads: **As indicated on Drawings**.
2. Other Design Loads: **As indicated on Drawings**.
3. Deflection Limits: For wind loads, no greater than [**1/180**] of the span.

B. Air Infiltration: Air leakage of not more than 0.0011 cfm/sq. ft. when tested according to ASTM E 1680 [**or ASTM E 283**] at the following test-pressure difference:

1. Test-Pressure Difference: **20.0 lbf/sq. ft**

C. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 1646[**or ASTM E 331**] at the following test-pressure difference:

1. Test-Pressure Difference: **20.0 lbf/sq. ft.**, as indicated by Structural Engineer.

D. Hydrostatic-Head Resistance: No water penetration when tested according to ASTM E 2140 at six inch (6”) water depth.

E. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.

1. Uplift Rating: **UL 90**, as indicated by Structural Engineer.

F. FM Global Listing: Provide metal roof panels and component materials that comply with requirements in FM Global 4471 as part of a panel roofing system and that are listed in FM Global's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.

1. Fire/Windstorm Classification: Class 1A-.

2. Hail Resistance: MH.

G. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

2.2 STANDING-SEAM METAL ROOF PANELS

A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips inside laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.

1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1514.

B. Vertical-Rib, Seamed-Joint, Standing-Seam Metal Roof Panels : Formed with vertical ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels, engaging opposite edge of adjacent panels, and mechanically seaming panels together.

1. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A 653/A 653M, G90 coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A 792/A 792M, Class AZ50 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

a. Nominal Thickness: 0.024 or 0.028 inch, per wind uplift requirements.
b. Exterior Finish: Kynar 500 or equal
c. Color: as selected from manufacturer’s standard range
d. Clips: One-piece floating to accommodate thermal movement.
e. Material: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet.
f. Joint Type: “T” Seam
g. Panel Width: 16 inches.
h. Panel Height: 2-3/8 inches.

2. Manufacturers:

a. Garland Company, Inc. or equal.

2.3 ROOF INSULATION

A. Glass-fiber mat, Grade 3, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, based on tests performed on unfaced core, minimum 20 psi.

1. R-Value: Twenty five (25)

2. Face: vinyl face

2.4 BEARING PLATES

A. Three inch by five inch (3” x 5”), sixteen (16) gauge bearing plates with predrilled holes.

2.5 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with roofing.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.

C. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer and cover board to insulation as follows:

1. Full-spread spray-applied, low-rise, two-component urethane adhesive.

D. Cover Board (where required by manufacturer): ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/4 inch thick, factory primed,

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Georgia-Pacific Corporation; Dens Deck Prime.

2.6 CONTINUOUS AIR BARRIER

A. Above Roof Insulation, install self-adhering vapor permeable air barrier per manufacturer’s instructions.

1.	Water vapor transmission	ASTM E96-05, Proc. A	214 g/m2/24h
2.	Vapor permeance	ASTM E96-05, Proc. A	31 perms
3.	Air permeance	ASTM E2178	Pass

C. Manufacturers:

a. Carlisle Residential, a division of Carlisle Construction Materials; WIP 300HT.
b. Grace Construction Products, a unit of W. R. Grace & Co.; Grace Ice and Water Shield HT.

c. Owens Corning; WeatherLock Metal High Temperature Underlayment.
d. Garland; RmerSeal self-adhering membrane.
e. As required by metal panel manufacturer.

2.7 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C 645; cold-formed, metallic-coated steel sheet, ASTM A 653/A 653M, G90 coating designation or ASTM A 792/A 792M, Class AZ50 coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

1. Closures: Provide prefabricated metal and neoprene closures at eaves and ridges of same metal as metal panels. Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
2. Continuous Panels: Panels shall be continuous from ridge to eave, with no end laps allowed unless pre-approved.

C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

D. Gutters: Formed from same material as roof panels, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch- long sections, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Furnish gutter supports spaced a maximum of 36 inches o.c., fabricated from same metal as gutters. Provide wire ball strainers of compatible metal at outlets. Finish gutters to match **metal roof panels**.

E. Downspouts: Formed from same material as roof panels. Fabricate in 10-foot- long sections, complete with formed elbows and offsets, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual."[same as above] Finish downspouts to match gutters. Straps installed every ten feet (10’) and at all joints.

F. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide exposed fasteners with heads matching color of metal roof panels by means of plastic caps or factory-applied coating.

1. Fasteners for Roof Panels:

a. Self-drilling or self-tapping, zinc-plated, hex-head carbon-steel screws, with a stainless-steel cap or zinc-aluminum-alloy head and EPDM or neoprene sealing washer.

b. Self-drilling or self-tapping 410 stainless or zinc-alloy steel hex washer head, with EPDM or PVC washer under heads of fasteners bearing on weather side of metal roof panels.
c. No exposed fasteners in the roof panel except plumbing boots.
d. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws with hex washer head. No exposed fasteners in the sheet metal trim except inside vertical faces for Jambs and Rakes.

2. Blind Fasteners: High-strength aluminum or stainless-steel rivets.

G. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1 inch [changed from ½”] wide and 1/8 inch thick.
2. Joint Sealant: ASTM C 920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

2.8 FABRICATION

A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.

1. Minimum 15-stage roll forming equipment shall be used to minimize oil canning.

C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

D. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

E. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.

2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
4. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

    a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal panel manufacturer for application, but not less than thickness of metal being secured.

2.9 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.

1. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
2. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.

B. Install water-resistive barriers directly over sheathing.

1. Install vapor permeable (breathable) air barrier over roof insulation as for temporary watertightness.

C. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.

1. Clean substrates of substances harmful to insulation, including removing projections capable of interfering with insulation attachment.
2. All self-adhering moisture proofing membrane to cover the roof deck shall be in place prior to installation of standing seam roof assembly.
3. Install flashings and other sheet metal to comply with requirements specified in Division 7 Section "Sheet Metal Flashing and Trim."
4. Install fasciae and copings to comply with requirements specified in Division 7 Section "Sheet Metal Flashing and Trim."
5. Miscellaneous Framing: Install subpurlins, eave angles, furring, and other miscellaneous roof panel support members and anchorage according to metal roof panel manufacturer's written recommendations.
6. Soffit Framing: Wire-tie or clip furring channels to supports, as required to comply with requirements for assemblies indicated.

3.3 THERMAL INSULATION INSTALLATION

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.

D. Flashings: Install flashings to cover underlayment to comply with requirements specified in this section and Section 076200 "Sheet Metal Flashing and Trim."

3.4 METAL PANEL INSTALLATION

A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise

indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels.
2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
3. Locate and space fastenings in uniform vertical and horizontal alignment.
4. Install flashing and trim as metal panel work proceeds.
5. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
6. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
7. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Steel Panels: Use stainless-steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.

C. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners through bearing plates according to manufacturers' written instructions.

D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

E. Field Assembled Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.

1. Install clips to supports with self-tapping fasteners.
2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
4. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.
5. Watertight Installation:

    a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend in writing by manufacturer as needed to make panels watertight.
    b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
    c. At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.

3.5 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal roof panel manufacturers; or, if not indicated, types recommended by metal roof panel manufacturer.

B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

C. Gutters: Join sections with riveted and soldered or lapped and sealed joints. Attach gutters to eave with gutter hangers spaced not more than 36 inches o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.

D. Downspouts: Join sections with telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.

1. Provide elbows at base of downspouts to direct water away from building.
2. Connect downspouts to underground drainage system indicated.

E. Roof Curbs: Install flashing around bases where they meet metal roof panels.

F. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.

3.6 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.7 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect metal roof panel installation, including accessories, minimum 3 days per workweek. Report results in writing.

B. Remove and replace applications of metal roof panels where tests and inspections indicate that they do not comply with specified requirements.

C. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.

D. Prepare test and inspection reports.

3.8 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 41 13.16

SECTION 07 62 00

SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes fabricated sheet metal items, including flashings, counter-flashings, gutters, and downspouts.

1. Fabricated sheet metal items, including flashings, counter-flashings, gutters, and downspouts.
2. Sealants for joints within sheet metal fabrications.
3. Reglets and accessories.
4. Sheet metal splash pans.

B. Related Requirements:

1. **Section 061000 "Rough Carpentry"** for wood nailers, curbs, and blocking.
2. Section 077200 "Roof Accessories" for set-on-type curbs, equipment supports, roof hatches, vents, and other manufactured roof accessory units.
3. Section 079200 “Joint Sealants” for sealing non-lap joints between sheet metal fabrications and adjacent construction.

1.3 REFERENCE STANDARDS

A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels; 2013.

B. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.

C. ASTM B32 - Standard Specification for Solder Metal; 2008 (Reapproved 2014).

D. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.

E. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2014.

F. ASTM B749 - Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products; 2014.

G. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.

H. ASTM D2178/D2178M - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing; 2013a.

I. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2012).

J. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association; 2012.

1.4 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at **Project site**.
   1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   2. Review special roof details, roof drainage, roof-penetration flashing, equipment curbs, and condition of other construction that affect sheet metal flashing and trim.
   3. Review requirements for insurance and certificates if applicable.
   4. Review sheet metal flashing observation and repair procedures after flashing installation.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.

   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.

B. Shop Drawings: For sheet metal flashing and trim.

   1. Include plans, elevations, sections, and attachment details.
   2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled work.
   3. Include identification of material, thickness, weight, and finish for each item and location in Project.
   4. Include details for forming, including profiles, shapes, seams, and dimensions.

5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
6. 0Include details of termination points and assemblies.
7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
8. Include details of roof-penetration flashing.
9. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, and counterflashings as applicable.
10. Include details of special conditions.
11. Include details of connections to adjoining work.

C. Samples for Verification: For each type of exposed finish.

1. Sheet Metal Flashing: 12 inches long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 inches long and in required profile. Include fasteners and other exposed accessories.
3. Unit-Type Accessories and Miscellaneous Materials: Full-size Sample.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator and Installer.
1. Company specializing in sheet metal work with 5 years of documented experience.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Sample Warranty: For special warranty.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.

1.9 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

B. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

C. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

D. Prevent contact with materials that could cause discoloration or staining.

1.11 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: **20** years for galvanized, copper, and aluminum fluoropolymer and/or mill finishes and**10** years for siliconized polyester from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with **NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual"** requirements for dimensions and profiles shown unless more stringent requirements are indicated.
1. NRCA has a testing program for Zinc-coated (galvanized) steel sheet, aluminum, and copper details.
2. SMACNA does not have a testing program or authorized fabricators for its details.

C. SPRI Wind Design Standard: Manufacture and install **copings roof edge flashings** capable of resisting the following design pressure:

1. Design Pressure: **As indicated on Drawing**.
   a. Design pressure is determined by formulas in the IBC that account for basic wind speed, exposure factor, building height, building importance factor, and pressure coefficient that combines a gust factor.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: **120 deg F, ambient; 180 deg F, material surfaces**.

2.2 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
1. Metals below are generally listed in order, with those most frequently used and corrosion resistant listed first.

B. Metallic-Coated Steel Sheet: Provide **zinc-coated (galvanized) steel sheet according to ASTM A 653/A 653M, G90 coating designation**; prepainted by coil-coating process to comply with ASTM A 755/A 755M.

1. Surface: **Smooth, flat**.
2. Exposed Coil-Coated Finish.
3. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil.
   a. For zinc-coated (galvanized) steel sheet, it serves as a protective back coating to protect the zinc from moisture and incompatible substrates.

2.3 UNDERLAYMENT MATERIALS

A. General:
1. Sheet metal flashing and trim applied directly over metal deck, solid sheathing, dissimilar metals, or corrosive substrates.
2. Rosin-sized building paper is used as a slip sheet over other types of underlayment materials.
3. Zinc-tin alloy-coated stainless steel can be applied over any of these underlayment materials.
4. Zinc-tin alloy-coated steel can be installed over rosin-sized building paper as the only underlayment.

B. Felt: ASTM D 226/D 226M, Type II (No. 30), asphalt-saturated organic felt; nonperforated.

C. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. minimum.

2.4 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners**, solder**, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal **or manufactured item** unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of same material and finish as flashing metal, with soft neoprene washers.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

   a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
   b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.

2. Fasteners for **Zinc-Coated (Galvanized)** Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

C. Solder:
1. For Zinc-Coated (Galvanized) Steel: ASTM B 32, **Grade Sn50, 50 percent tin and 50 percent lead**

D. Primer: Zinc chromate type.

E. Protective Backing Paint: Zinc molybdate alkyd.

F. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.

G. Elastomeric Sealant: ASTM C 920, elastomeric [**silicone**] polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

1. Sealant to be Exposed in Completed Work: elastomeric sealant, 100 percent silicone with minimum movement capability of plus/minus 25 percent and recommended by manufacturer for substrates to be sealed; clear.
2. Sealant to be Concealed in Completed Work: Non-curing butyl sealant.

H. Bituminous Coating: Cold-applied asphalt emulsion according to ASTM D 1187.

I. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

J. Reglets: Surface mounted type, galvanized steel; face and ends covered with plastic tape.

2.5 MANUFACTURED SHEET METAL FLASHING AND TRIM

A. Reglets: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated **with factory-mitered and -welded corners and junctions and with interlocking counterflashing on exterior face, of same metal as reglet**.
   1. Material: **Galvanized steel, 0.022 inch thick**.
   2. Surface-Mounted Type: Provide with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
   3. Accessories:
      a. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where Drawings show reglet without metal counterflashing.
      b. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing's lower edge.
   4. Finish: **With manufacturer's standard color coating**.

2.6 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
   1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
   2. Obtain field measurements for accurate fit before shop fabrication.
   3. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
   4. Hem exposed edges on underside 1/2 inch; miter and seam corners.
   5. Fabricate corners from one piece with minimum 18-inch-long legs; seam for rigidity, seal with sealant.
   6. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

C. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."

D. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.
3. Fabricate flashings to allow toe to extend 2 inches over roofing surface. Return and brake edges.

E. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.

F. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

G. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. **Rivet joints where necessary for strength.**

H. Do not use graphite pencils to mark metal surfaces.

2.7 STEEP-SLOPE ROOF SHEET METAL FABRICATIONS

A. Apron, Step, Cricket, and Backer Flashing: Fabricate from the following materials:
1. Galvanized Steel: **0.022 inch** thick.

B. Valley Flashing: Fabricate from the following materials:
1. Copper (minimum 16 oz., is recommended for valley flashings.
2. Galvanized Steel: **0.028 inch** thick may be used but must be painted.
3. Felt in the valley should lap 6 in. over the upper ends of valley flashing pieces (in the 8 in. metal lap). The roofing felt should lap over the cleated edges of the flashing. A 30 in. wide felt is placed in the valley.
4. The edges of the valley should be formed with a hook edge and cleated on 24 in. centers.
5. Flashings are generally formed in 10 ft. sections, which are lapped 8 in in the direction of flow. The top of each section should be fastened with nails of material compatible with the flashing.

C. Drip Edges: Fabricate from the following materials:
1. Galvanized Steel: **0.022 inch** thick.

D. Eave, Rake[**, Ridge, and Hip**] Flashing: Fabricate from the following materials:
1. Galvanized Steel: **0.022 inch** thick.

E. Counterflashing: **Shop fabricate interior and exterior corners.** Fabricate from the following materials:
1. Galvanized Steel: **0.022 inch** thick.

F. Flashing Receivers: Fabricate from the following materials:
1. Galvanized Steel: **0.022 inch** thick.

G. Roof-Penetration Flashing: Fabricate from the following materials:
1. Galvanized Steel: **0.028 inch** thick.
2. Avoid roof metal panel joint locations.
3. Soldering or welding of joints and seams is preferable to lap–sealing and mechanical fastening. All fasteners must be watertight and sealed at all edge laps.
4. Laps should be in the direction of water flow wherever practical. Laps of rectangular shaped penetration flashing over (lower elevation) roof panel or under (higher elevation) roof panel should be 12 in. minimum and have double rows of sealant. Side laps at the edge of base pans should preferably occur on ribs or seams rather than in the pan bottom and should have double rows of sealant.
5. Drainage clearance troughs should be provided be-tween a rectangular penetration flashing and the ends of interrupted ribs (above the flashing). When the width of the rectangular flashing (vertical projection).

2.8 WALL SHEET METAL FABRICATIONS

A. Examples of locations for continuous through-wall flashing include under masonry copings, at story-height shelf angles, and at sills and lintels of horizontal ribbon windows.

B. Examples of locations for discontinuous through-wall flashing include sills and lintels for punched windows, doors, louvers, and wall-penetrating construction.

C. Through-Wall Flashing: Fabricate continuous flashings in minimum 96-inch- long, but not exceeding 12-foot- long, sections, under copings, and at shelf angles. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches beyond each side of wall openings; and form with 2-inch- high, end dams. Fabricate from the following materials:

1. Copper: **16 oz./sq. ft**.

D. Opening Flashings in Frame Construction: Fabricate head, sill, **jamb,** and similar flashings to extend **4 inches** beyond wall openings. Form head and sill flashing with 2-inch- high, end dams. Fabricate from the following materials:
1. Galvanized Steel: **0.022 inch** thick.

E. Wall Expansion-Joint Cover: Fabricate from the following materials:
1. Galvanized Steel: **0.028 inch** thick.

2.9 MISCELLANEOUS SHEET METAL FABRICATIONS

A. Equipment Support Flashing: Fabricate from the following materials:
1. Galvanized Steel: **0.028 inch** thick.

B. Overhead-Piping Safety Pans: Fabricate from the following materials:
1. Galvanized Steel: **0.040 inch** thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.

1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Install starter and edge strips, and cleats before starting installation.

D. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

3.2 UNDERLAYMENT INSTALLATION

A. Felt Underlayment: Install felt underlayment, wrinkle free, using adhesive to minimize use of mechanical fasteners under sheet metal flashing and trim. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches.

B. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Prime substrate if recommended by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps and edges with roller. Cover underlayment within 14 days.

C. Apply slip sheet, wrinkle free, **directly on substrate** before installing sheet metal flashing and trim.

3.3 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Insert flashings into reglets to form tight fit. Secure in place with lead wedges. Pack remaining spaces with lead wool. Seal flashings into reglets with sealant.
2. Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.

3. Apply plastic cement compound between metal flashings and felt flashings.
4. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
5. Solder metal joints for full metal surface contact. After soldering, wash metal clean with neutralizing solution and rinse with water.
6. Secure gutters and downspouts in place using concealed fasteners.
7. Slope gutters 1/4 inch per 10 feet, minimum.
8. Set splash pads under downspouts. Set in place with a section of roof membrane when downspout empties onto a roof.

B. Joints in gutters must be lapped 1 in., riveted on 2 in. centers and soldered if the metal can be soldered. In all welded gutters, field welds may not be practical on metals thinner than 0.080 in. aluminum or on 14 gage steel or stainless steel. With metals that cannot be soldered or welded, (such as prepainted metal or uncoated aluminum) a compatible sealant must be continuously applied within a 1 in. minimum lapped joint and the sealed lap must be riveted on l in. centers. All rivet applications must receive sealant after installation. Lapping joints in the direction of flow is preferred; gutter outlet connections may not fit this condition.

1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of sealant.
2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
3. Space cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
5. Torch cutting of sheet metal flashing and trim is not permitted.
6. Do not use graphite pencils to mark metal surfaces to prevent galvanic corrosion between graphite and aluminum or aluminum zinc alloy-coated steel.

C. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Coat concealed side of **uncoated-aluminum and stainless-steel** sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.

D. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of **10 feet** with no joints within 24 inches of corner or intersection.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

E. Fasteners: Use fastener sizes that penetrate **substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance**.

F. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

G. Seal joints as required for watertight construction.

1. Use sealant-filled joints unless otherwise indicated. Embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

H. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches; however, reduce pre-tinning where pre-tinned surface would show in completed Work.

1. Do not solder [**metallic-coated steel**] sheet; soldering requires removal of painted, coated or lacquered finishes.
2. Although unusual, zinc-coated (galvanized) steel, a type of metallic-coated steel, may be soldered.
3. Do not use torches for soldering.
4. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.

3.4 ROOF FLASHING INSTALLATION

A. General: Install sheet metal flashing and trim to comply with performance requirements**, sheet metal manufacturer's written installation instructions,** and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at **staggered 3-inch** centers.

C. Copings: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated.

1. Interlock exterior bottom edge of coping with continuous cleat anchored to substrate at **24-inch** centers.
2. Anchor interior leg of coping with washers and screw fasteners through slotted holes at **24-inch** centers.

D. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches over base flashing. Install stainless-steel draw band and tighten.

E. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches over base flashing. Lap counterflashing joints minimum of 4 inches. Secure in waterproof manner by means of [**snap-in installation and sealant or lead wedges and sealant**], [**interlocking folded seam or blind rivets and sealant**], or [**anchor and washer at 36-inch centers**] unless otherwise indicated.

F. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with **elastomeric** sealant and clamp flashing to pipes that penetrate roof.

3.5 WALL FLASHING INSTALLATION

A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Opening Flashings in Frame Construction: Install continuous head, sill, **jamb,** and similar flashings to extend [**4 inches**] beyond wall openings.

3.6 MISCELLANEOUS FLASHING INSTALLATION

A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.

B. Overhead-Piping Safety Pans: Suspend pans from structure above, independent of other overhead items such as equipment, piping, and conduit, unless otherwise indicated on Drawings. Pipe and install drain line to plumbing waste or drainage system.

3.7 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.8 FIELD QUALITY CONTROL

A. See Section 014000 - Quality Requirements, for field inspection requirements.

B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

3.9 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.

E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 62 00

SECTION 07 62 50

SHEET METAL GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.1 SUMMARY

A. Description of Scope and Intent

1. CONTRACTOR shall provide all material, labor, and tools required to complete the installation of specified system.
2. Any omission of reference to items required to complete the full operational and functional system specified in the section does not relieve the CONTRACTOR of the obligation to provide same.
3. To provide installation of all items, including delivery, dispersing to the proper locations within the building, and affixing in place.
4. Installation shall be accomplished by workers skilled in their craft who will perform their work in a professional manner and will leave the premises safe, orderly and clean.
5. CONTRACTOR is responsible for coordination of work included in this Specification with all other Specification sections related to furnishing of all materials, labor, permits, fees and services necessary for completion of work in this Section.
6. In the event of a conflict between the design drawings, referenced standards, and these Specifications, the more stringent shall govern unless directed otherwise by the Architect. CONTRACTOR shall strictly adhere to OSHA requirements and local codes or those of any regulatory agency or body with jurisdiction.

B. Section Includes:

1. Gutters and downspouts for structures and buildings.
2. Fasteners and attachment devices.
3. Coatings and slip sheets to isolate sheet metal from dissimilar materials.

C. NOTE: Required wood blocking, nailers, and edge strips are not specified in this section.

1.2 SUBMITTALS

A. Provide shop drawings in accordance with Section 013000.

B. Product Data: Manufacturer's technical information and installation instructions, in sufficient detail to demonstrate products comply with contract documents.

C. Shop Drawings: Detailed drawings clearly indicating component profiles, joints, transitions, fastening methods, and relationship of flashing materials to adjacent construction.

D. Samples: Submit 6-inch-square samples of each type of metal and finish required.

1.3 QUALITY ASSURANCE

A. Installer: A company familiar with installing products included in this section and which has completed at least 20 installations similar in scope to work included in this section.

B. Quality Standard:

1. Fabricate and install sheet metal work in accordance with Sheet Metal and Air Conditioning CONTRACTORS' National Association, Inc. (SMACNA) "Architectural Sheet Metal Manual," unless specifically indicated otherwise.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Gutters: Manufactured in uniform section lengths not exceeding **12 feet**, with matching corner units, ends, outlet tubes, and other accessories. Elevate back edge at least 1 inch above front edge. Furnish flat-stock gutter straps, gutter brackets, expansion joints, and expansion-joint covers fabricated from same metal as gutters.

1. Steel, Kynar 500 finish from manufacturer’s standard range
2. Gutter Profile: 6x8 according to SMACNA's "Architectural Sheet Metal Manual."
3. Corners: Factory mitered and [mechanically clinched and sealed watertight].
4. Gutter Supports: Manufacturer's standard supports as selected by Architect with finish matching the gutters.

B. Downspouts: 4x4 square complete with mitered elbows, manufactured from the following exposed metal. Furnish with metal hangers, from same material as downspouts, and anchors.
1. Steel, Kynar 500 finish from manufacturer’s standard range

C. Splash Pans: Fabricate from the following exposed metal or precast concrete:
1. Precast concrete type, of size and profiles indicated; minimum 3000 psi at 28 days, with minimum 5 percent air entrainment.

2.2 ACCESSORY MATERIALS

A. Fasteners: Corrosion-resistant metal of same material as the material being fastened or other material recommended by sheet metal manufacturer. Match finish, coating and color of exposed fastener heads to finish and color of sheet material being fastened.

B. Sealant: As specified in Division 7.

1. Use noncuring type for concealed joints.
2. Use nonsag elastomeric type for exposed joints.

C. Joint Adhesive: Two-component noncorrosive epoxy adhesive, recommended by metal manufacturer for sealing of nonmoving joints.

D. Underlayment Materials:

1. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
2. Felt: ASTM D 226/D 226M, Type II (No. 30), asphalt-saturated organic felt, nonperforated.
3. Slip Sheet: Rosin-sized building paper, 3-lb/100 sq. ft. minimum.

E. Bituminous Coating:

1. Heavy bodied, sulfur-free, asphalt-based paint; FS TT-C-494.

F. Gutter metal hangers and brackets.

G. Downspout metal hangers.

H. Splash Block:
1. Concrete

2.3 FABRICATION - GENERAL

A. Form sheet metal to match profiles indicated, substantially free from oil-canning, fish-mouths, and other defects.

B. Comply with SMACNA "Architectural Sheet Metal Manual" for applications indicated.

C. Conceal fasteners and expansion provisions wherever possible.

1. Exposed fasteners are not allowed on faces of sheet metal exposed to public view.

D. Form a 1/2-inch hem on underside of exposed edges.

E. Fabricate cleats and attachment devices from same material as sheet metal component being anchored or from compatible, noncorrosive metal recommended by sheet metal manufacturer.

1. Gage: As recommended by SMACNA or metal manufacturer for application, but in no case less than gage of metal being secured or as otherwise noted.

2.4 GUTTERS AND DOWNSPOUTS

A. Fabricate to cross-sections indicated and from prefinished aluminum sheet, in minimum 96-inch long sections. Mount gutter sections flat.

B. Form sheet metal to profile dimensions indicated, free from distortions and defects detrimental to water-tight system.

1. Seam and seal metal joints except for joints indicated by SMACNA to be welded.
2. Provide reinforced emergency overflow openings in gutter face as indicated on the drawings.

C. Provide built-in expansion joints in gutters at spacing and locations shown on drawings, but not to exceed 40 feet apart.

D. Provide removable debris screens for gutters, fabricated from 1/4-inch mesh wire cloth of same material used for gutters or approved compatible material. Provide formed sheet metal frame on 4 sides of each screen unit. Length of screen units not to exceed ten (10) feet.

E. Provide sheet metal baffles 6-inches high with legs 18-inches long at gutter corners below roof valleys.

F. Provide connection transitions of metal, matching downspout material to securely connect downspouts to 45-degree angle elbow at grade as shown on drawings.

G. Gutter Supports: Hangers and brackets fabricated from metal and coating system matching gutters, of size recommended by SMACNA, but not less than twice the gage of the gutter thickness. Provide supports at maximum of 4 feet on center.

H. Downspout Supports: Metal brackets fabricated from same metal and coating as downspouts of thickness recommended by SMACNA, but not less than twice the downspout thickness, and as detailed on drawings. Provide one at top and one at bottom plus one at any intermediate point.

I. Miter all gutter corner joints and downspout elbows.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions under which products of this section are to be installed and verify that work may properly commence. Do not proceed with the work until unsatisfactory conditions have been fully resolved.

1. Verify that nailers, blocking, and other attachment provisions for sheet metal work are properly located and securely fastened to resist effects of wind and thermal stresses.

3.2 PREPARATION

A. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

3.3 INSTALLATION

A. General: Comply with sheet metal manufacturer's installation methods and recommendations in the SMACNA "Architectural Sheet Metal Manual."

B. Sealed Joints: Form minimum 1-inch hooked joints and embed flange into sealant or adhesive. Form metal to completely conceal sealant or adhesive.

1. Use joint adhesive for nonmoving joints specified not to be soldered.
2. Moving joints: When ambient temperature is moderate (40-70 degrees F) at time of installation, set joined members for 50 percent movement either way. Adjust setting

position of joined members proportionally for temperatures above 70 degrees F. Do not install sealant at temperatures below 40 degrees F. Refer to section on sealants elsewhere in Division 7 for handling and installation requirements for joint sealers.

3.4 CLEANING AND PROTECTION

A. Remove protective film from prefinished sheet metal immediately after installation.

B. Repair or replace work that is damaged or defaced, as directed by the architect.

1. Refinish marred and abraded areas of prefinished sheet using finish manufacturer's recommended methods and materials. Replace units which, in the opinion of the architect, cannot satisfactorily be refinished in place.

C. Protect sheet metal work as recommended by the installer so that completed work will be clean, secured, and without damage at substantial completion.

END OF SECTION 07 62 50

SECTION 07 92 00

JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Silicone joint sealants.
2. Urethane joint sealants.
3. Latex joint sealants.

B. Related Requirements:

1. Section 088000 "Glazing" for glazing sealants.
2. Section 092900 "Gypsum Board" for sealing perimeter joints.
3. Section 093000 "Tiling" for sealing tile joints.

1.3 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- wide joints formed between two 6-inch- long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

D. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.

C. Product Test Reports: For each kind of joint sealant, for tests performed by manufacturer and witnessed by a qualified testing agency.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer

1.6 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.7 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Correct defective work within a five-year period after Date of Substantial Completion.
2. Include coverage for installed sealants and accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

C. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

D. Colors of Exposed Joint Sealants As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

A. Silicone, S, NS, 50, T, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Uses T and NT.

2.3 NONSTAINING SILICONE JOINT SEALANTS

A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C 1248.

1. Non-Sag Joint Sealant.
2. Not expected to withstand continuous water immersion or traffic.
3. Movement Capability: Plus and minus 50 percent, minimum.
4. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
5. Color: Match adjacent finished surfaces.
6. Manufacturers:
    a. Dow Corning Corporation; 790 Silicone Building Sealant: www.dowcorning.com/construction.
    b. Pecora Corporation; 890NST Ultra Low Modulus Architectural Silicone Sealant Class 100: www.pecora.com.
    c. Substitutions: See Section 016000 - Product Requirements.

B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.

2.4 URETHANE JOINT SEALANTS

A. Single or Multicomponent not expected to withstand continuous water immersion.

1. Color: Match adjacent finished surfaces.
2. Manufacturers:
   a. Pecora Corporation; DynaTrol I-XL General Purpose One Part Polyurethane Sealant: www.pecora.com.
   b. Sika Corporation; Sikaflex-2c NS: www.usa-sika.com.
   c. Substitutions: See Section 016000 - Product Requirements.

B. Urethane, M, NS, 25, T, NT: Multicomponent, nonsag, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type M, Grade NS, Class 25, Uses T and NT.

2.5 MILDEW-RESISTANT JOINT SEALANTS

A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.

1. Non-Sag Joint Sealant.
2. Color: White.
3. Manufacturers:
   a. Pecora Corporation; 898NST Sanitary Silicone Sealant - Class 50: www.pecora.com.
   b. Sika Corporation; Sikasil GP: www.usa-sika.com.
   c. Substitutions: See Section 016000 - Product Requirements.

B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.

2.6 BUTYL JOINT SEALANTS

A. Butyl-Rubber-Based Joint Sealants: ASTM C 1311.

2.7 EPOXY JOINT SEALANTS

A. Semi-Rigid Self-Leveling Epoxy Joint Filler: Epoxy or epoxy/polyurethane copolymer; intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.

B. Composition: Multicomponent, 100 percent solids by weight.

C. Hardness: Minimum of 85 (Shore A) or 35 (Shore D), when tested in accordance with ASTM D2240 after 7 days.

D. Joint Width, Minimum: 1/8 inch.

E. Products:

1. Dayton Superior Corporation; Pro-Poxy P606: www.daytonsuperior.com.
2. Nox-Crete; DynaFlex 502: www.nox-crete.com
3. W.R. Meadows, Inc; Rezi-Weld Flex: www.wrmeadows.com.
4. Substitutions: See Section 016000 - Product Requirements.

2.8 LATEX JOINT SEALANTS

A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, Grade NF, ASTM C 834.

1. Type OP for opaque sealants containing color or extended pigments and Type C for clear or translucent sealants.

2. Single component, non-staining, non-bleeding, non-sagging, not intended for exterior use.
3. Color: Standard colors matching finished surfaces.
4. Manufacturers:
   a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant: www.pecora.com.
   b. Sherwin-Williams Company; 950A Siliconized Acrylic Latex Caulk: www.sherwin- williams.com.
   c. Substitutions: See Section 016000 - Product Requirements.

2.9 JOINT-SEALANT BACKING

A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

1. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.10 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.

1. Verify that backing materials are compatible with sealants.
2. Verify that backer rods are of the correct size.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
   a. Concrete.

b. Masonry.
c. Unglazed surfaces of ceramic tile.
d. Exterior insulation and finish systems.

3. Remove laitance and form-release agents from concrete.
4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
   a. Metal.
   b. Glass.
   c. Glazed surfaces of ceramic tile.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

D. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

E. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

F. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

G. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.
4. Provide flush joint profile at locations indicated on Drawings according to Figure 8B in ASTM C 1193.
5. Provide recessed joint configuration of recess depth and at locations indicated on Drawings according to Figure 8C in ASTM C 1193.
    a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:
    a. Construction joints in cast-in-place concrete.
    b. Joints between plant-precast architectural concrete units.
    c. Joints in exterior insulation and finish systems.
    d. Joints between metal panels.
    e. Joints between different materials listed above.
    f. Perimeter joints between materials listed above and frames of doors, windows and louvers.
    g. Control and expansion joints in ceilings and other overhead surfaces.

h. Other joints as indicated on Drawings.

2. Joint Sealant: Silicone, nonstaining, S, NS, 50, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

B. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.

1. Joint Locations:
   a. Isolation joints in cast-in-place concrete slabs.
   b. Control and expansion joints in tile flooring.
   c. Other joints as indicated on Drawings.

2. Joint Sealant: Urethane, S, P, 25, T, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors].

C. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:
   a. Control and expansion joints on exposed interior surfaces of exterior walls.
   b. Tile control and expansion joints.
   c. Vertical joints on exposed surfaces of unit masonry, concrete, walls and partitions.
   d. Joints on underside of plant-precast structural concrete beams and planks.
   e. Other joints as indicated on Drawings.

2. Joint Sealant: Urethane, S, NS, 25, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

D. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement.

1. Joint Locations:
   a. Control joints on exposed interior surfaces of exterior walls.
   b. Perimeter joints between interior wall surfaces and frames of interior doors, windows and elevator entrances.
   c. Other joints as indicated on Drawings.

2. Joint Sealant: Acrylic latex.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

E. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:
   a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
   b. Tile control and expansion joints where indicated.
   c. Other joints as indicated on Drawings.

2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

F. Joint-Sealant Application: Concealed mastics.

1. Joint Locations:
   a. Aluminum thresholds.
   b. Sill plates.
   c. Other joints as indicated on Drawings.

2. Joint Sealant: Butyl-rubber based.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 07 92 00

SECTION 081416 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid-core doors with wood-veneer faces.
2. Factory finishing flush wood doors.

1.2 SUBMITTALS

A. Product Data: For each type of door indicated. Include details of core and edge construction. Include factory-finishing specifications.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.

1. Indicate dimensions and locations of mortises and holes for hardware.
2. Indicate dimensions and locations of cutouts.
3. Indicate requirements for veneer matching.
4. Indicate doors to be factory finished and finish requirements.
5. Indicate fire-protection ratings for fire-rated doors.

C. Samples for Initial Selection: For factory-finished doors.

D. Samples for Verification:

1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches , for each material and finish. For each wood species and transparent finish, provide set of three samples showing typical range of color and grain to be expected in the finished work.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is certified for chain of custody by an FSC-accredited certification body.

B. Source Limitations: Obtain flush wood doors from single manufacturer.

C. Quality Standard: In addition to requirements specified, comply with WDMA I.S.1-A, "Architectural Wood Flush Doors."

D. Forest Certification: Provide doors made with not less than 70 percent of wood products

obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."

1.4 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in plastic bags or cardboard cartons.

C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.5 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
b. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.

2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Graham; an Assa Abloy Group company.
2. Marshfield Door Systems, Inc.
3. VT Industries Inc.
4. Approved equals

2.2 DOOR CONSTRUCTION, GENERAL

A. Low-Emitting Materials: Provide doors made with adhesives and composite wood products that do not contain urea formaldehyde.

B. WDMA I.S.1-A Performance Grade: Standard Duty.

C. Particleboard-Core Doors:

1. Particleboard: ANSI A208.1, Grade LD-1.
2. Blocking: Provide wood blocking in particleboard-core doors as follows:

a. 5-inch top-rail blocking, in doors indicated to have closers.
b. 5-inch bottom-rail blocking, in doors indicated to have kick plates.

2.3 VENEERED-FACED DOORS FOR TRANSPARENT FINISH

A. Interior Solid-Core Doors:

1. Grade: Custom (Grade A faces).
2. Species: Select White Maple
3. Cut: Plain sliced (flat sliced).
4. Match between Veneer Leaves: Pleasing match.
5. Assembly of Veneer Leaves on Door Faces: Balance match.
6. Exposed Vertical Edges: Same species as faces or a compatible species.
7. Core: Structural composite lumber.
8. Construction: Five plies. Stiles and rails are bonded to core, then entire unit abrasive planed before veneering.
9. WDMA I.S.1-A Performance Grade: Standard Duty.

2.4 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of

referenced quality standard for fitting unless otherwise indicated.

2.5 FACTORY FINISHING

A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.

1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on bottom edges, edges of cutouts, and mortises.

B. Finish doors at factory.

C. Transparent Finish:

1. Grade: Premium.
2. Finish: WDMA TR-4 conversion varnish or TR-6 catalyzed polyurethane.
3. Staining: **as scheduled.**
4. Sheen: Satin.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames before hanging doors.

1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Hardware: For installation, see Division 08 Section "Door Hardware."

B. Installation Instructions: Install doors to comply with manufacturer's written instructions and the referenced quality standard, and as indicated.

C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.

1. Clearances: Provide 1/8 inch at heads, jambs, and between pairs of doors. Provide 1/8

inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated. Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of threshold unless otherwise indicated.

a. Comply with NFPA 80 for fire-rated doors.

2. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
3. Bevel fire-rated doors 1/8 inch in 2 inches at lock edge; trim stiles and rails only to extent permitted by labeling agency.

D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 081416

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior and interior storefront framing.
2. Storefront framing for punched openings.
3. Exterior and interior manual-swing entrance doors and door-frame units.

1.2 PERFORMANCE REQUIREMENTS

A. General Performance: Aluminum-framed systems shall withstand the effects of the following performance requirements without exceeding performance criteria or failure due to defective manufacture, fabrication, installation, or other defects in construction:

1. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
2. Dimensional tolerances of building frame and other adjacent construction.
3. Failure includes the following:

    a. Deflection exceeding specified limits.
    b. Thermal stresses transferring to building structure.
    c. Framing members transferring stresses, including those caused by thermal and structural movements to glazing.
    d. Noise or vibration created by wind and by thermal and structural movements.
    e. Loosening or weakening of fasteners, attachments, and other components.
    f. Sealant failure.
    g. Failure of operating units.

B. Structural Loads:

1. Wind Loads: As indicated on Drawings.

C. Deflection of Framing Members:

1. Deflection Normal to Wall Plane: Limited to edge of glass in a direction perpendicular to glass plane shall not exceed L/175 of the glass edge length for each individual glazing lite or an amount that restricts edge deflection of individual glazing lites to 3/4 inch (19 mm), whichever is less.
2. Deflection Parallel to Glazing Plane: Limited to L/360 of clear span or 1/8 inch (3.2 mm), whichever is smaller.

D. Structural-Test Performance: Provide aluminum-framed systems tested according to ASTM E 330 as follows:

1. When tested at positive and negative wind-load design pressures, systems do not evidence deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity, but not fewer than 10 seconds.

E. Windborne-Debris-Impact Resistance Performance: Shall be tested in accordance with ASTM E 1886, information in ASTM E 1996 and TAS 201/203.

1. Large-Missile Impact: For aluminum-framed systems located within 30 feet (9.1 m) of grade.
2. Small-Missile Impact: For aluminum-framed systems located above 30 feet (9.1 m) of grade.

F. Air Infiltration: Provide aluminum-framed systems with maximum air leakage through fixed glazing and framing areas of 0.06 cfm/sq. ft. (0.03 L/s per sq. m) of fixed wall area when tested according to ASTM E 283 at a minimum static-air-pressure difference of 1.57 lbf/sq. ft. (75 Pa).

G. Water Penetration under Static Pressure: Provide aluminum-framed systems that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft. (300 Pa).

H. Thermal Movements: Provide aluminum-framed systems that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
2. Interior Ambient-Air Temperature: 75 deg F (24 deg C).

I. Condensation Resistance: Provide aluminum-framed systems with fixed glazing and framing areas having condensation-resistance factor (CRF) of not less than 53 when tested according to AAMA 1503.

J. Thermal Conductance: Provide aluminum-framed systems with fixed glazing and framing areas having an average U-factor of not more than 0.69 Btu/sq. ft. x h x deg F (3.92 W/sq. m x K) when tested according to AAMA 1503.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for aluminum-framed systems.

B. LEED Submittal:

1. Product Data for Credit EQ 4.1: For adhesives and sealants used inside of the weatherproofing system, including printed statement of VOC content.

C. Shop Drawings: For aluminum-framed systems. Include plans, elevations, sections, details, and attachments to other work.

1. Include details of provisions for system expansion and contraction and for drainage of moisture in the system to the exterior.
2. For entrance doors, include hardware schedule and indicate operating hardware types, functions, quantities, and locations.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for aluminum-framed systems, indicating compliance with performance requirements.

E. Maintenance Data: For aluminum-framed systems to include in maintenance manuals.

F. Warranties: Sample of special warranties.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Engineering Responsibility: Prepare data for aluminum-framed systems, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in systems similar to those indicated for this Project.

C. Product Options: Information on Drawings and in Specifications establishes requirements for systems' aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.

1. Do not revise intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If revisions are proposed, submit comprehensive explanatory data to Architect for review.

D. Accessible Entrances: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines.

E. Source Limitations for Aluminum-Framed Systems: Obtain from single source from single manufacturer.

1.5 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of structural supports for aluminum-framed systems by field measurements before fabrication and indicate measurements on Shop Drawings.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including, but not limited to, excessive deflection.
b. Noise or vibration caused by thermal movements.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
d. Water leakage through fixed glazing and framing areas.
e. Failure of operating components.

2. Warranty Period: Five years from date of Substantial Completion.

B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes do not comply with requirements or that fail in materials or workmanship within specified warranty period. Warranty does not include normal weathering.

1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Kawneer North America; an Alcoa company.

2. Oldcastle.
3. Approved Equal

2.2 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

1. Sheet and Plate: ASTM B 209 (ASTM B 209M).
2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221 (ASTM B 221M).
3. Extruded Structural Pipe and Tubes: ASTM B 429.
4. Structural Profiles: ASTM B 308/B 308M.

B. Steel Reinforcement: Manufacturer's standard zinc-rich, corrosion-resistant primer, complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.

1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.

2.3 FRAMING SYSTEMS

A. Framing Members: Manufacturer's standard extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Construction: Thermally broken.
2. Glazing System: Retained mechanically with gaskets on four sides.
3. Glazing Plane: As indicated.

B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

C. Fasteners and Accessories: Manufacturer's standard stainless steel fasteners and accessories compatible with adjacent materials.

1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.
3. No exposed fasteners will be permitted.

D. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts, complying with ASTM A 123/A 123M or ASTM A 153/A 153M.

E. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

F. Framing System Gaskets and Sealants: Manufacturer's standard, recommended by manufacturer for joint type.

1. Provide sealants for use inside of the weatherproofing system that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.4 GLAZING SYSTEMS

A. Glazing: As specified in Division 08 Section "Glazing."

B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, molded or extruded, of profile and hardness required to maintain watertight seal.

C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.

2.5 ENTRANCE DOOR SYSTEMS

A. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing operation.

1. Door Construction: 1-3/4-inch (44.5-mm) overall thickness, with minimum 0.125-inch-(3.2-mm-) hick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
2. Door Design: Wide stile; 5-inch (127-mm) nominal width.

    a. Accessible Doors: Smooth surfaced for width of door in area within 10 inches (255 mm) above floor or ground plane.

3. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.

    a. Provide nonremovable glazing stops on outside of door.

2.6 ACCESSORY MATERIALS

A. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Division 07 Section "Joint Sealants."

1. Provide sealants for use inside of the weatherproofing system that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30-mil (0.762-mm) thickness per coat.

C. Flashing Pan: Manufacturer's standard window sill flashing pan with end dams.

2.7 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
4. Physical and thermal isolation of glazing from framing members.
5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
6. Provisions for field replacement of glazing from interior.
7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

C. Storefront Framing: Fabricate components for assembly using shear-block system or screw-spline system.

D. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

1. At exterior doors, provide compression weather stripping at fixed stops.
2. At interior doors, provide silencers at stops to prevent metal-to-metal contact. Install three silencers on strike jamb of single-door frames and two silencers on head of frames for pairs of doors.

E. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.

F. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.8 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General:

1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure nonmovement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
6. Seal joints watertight unless otherwise indicated.

B. Metal Protection:

1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or applying sealant or tape, or by installing nonconductive spacers as recommended by manufacturer for this purpose.
2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.

D. Set continuous sill members and flashing in full sealant bed as specified in Division 07 Section "Joint Sealants" to produce weathertight installation.

E. Install components plumb and true in alignment with established lines and grades, and without warp or rack.

F. Install glazing as specified in Division 08 Section "Glazing."

G. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points.

1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.

2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

H. Install perimeter joint sealants as specified in Division 07 Section "Joint Sealants" to produce weathertight installation.

3.3 ERECTION TOLERANCES

A. Install aluminum-framed systems to comply with the following maximum erection tolerances:

1. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet (3 mm in 3.7 m); 1/4 inch (6 mm) over total length.
2. Alignment:

a. Where surfaces abut in line, limit offset from true alignment to 1/16 inch (1.5 mm).
b. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch (0.8 mm).

B. Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch (3 mm).

3.4 ADJUSTING

A. Adjust operating entrance door hardware to function smoothly as recommended by manufacturer.

1. For entrance doors accessible to people with disabilities, adjust closers to provide a 3-second closer sweep period for doors to move from a 70-degree open position to 3 inches (75 mm) from the latch, measured to the leading door edge.

END OF SECTION 084113

SECTION 08 71 00

DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY:

A. Section Includes: Finish Hardware for door openings, except as otherwise specified herein.

1. Door hardware for steel (hollow metal) doors.
2. Door hardware for aluminum doors.
3. Door hardware for wood doors.
4. Door hardware for other doors indicated.
5. Keyed cylinders as indicated.

B. Related Sections:

1. Division 06: Rough Carpentry.
2. Division 08: FRP Doors and Frames
3. Division 08: Sliding Doors.

C. References: Comply with applicable requirements of the following standards. Where these standards conflict with other specific requirements, the most restrictive shall govern.

1. Builders Hardware Manufacturing Association (BHMA)
2. NFPA 101 Life Safety Code, 2010
3. NFPA 80 - Standard for Fire Doors and Windows, 2013
4. ANSI-A156.xx- Various Performance Standards for Finish Hardware
5. UL10C – Positive Pressure Fire Test of Door Assemblies
6. ANSI-A117.1 – Accessible and Usable Buildings and Facilities
7. DHI /ANSI A115.IG – Installation Guide for Doors and Hardware
8. IBC – International Building Code, 2015

D. Intent of Hardware Groups

1. Should items of hardware not definitely specified be required for completion of the Work, furnish such items of type and quality comparable to adjacent hardware and appropriate for service required.
2. Where items of hardware are not definitely or correctly specified, but are required for completion of the Work, a written statement of such omission, error, or other discrepancy must be submitted to Architect, prior to date specified for receipt of bids for clarification by addendum. Otherwise, furnish such items in the type and quality established by this specification, and appropriate to the service intended.

E. Allowances

1. Refer to Division 01 for allowance amount and procedures.

F. Alternates

1. Refer to Division 01 for Alternates and procedures.

1.2 SUBSTITUTIONS:

A. Comply with Division 01.

1.3 SUBMITTALS:

A. Comply with Division 01.

B. Special Submittal Requirements: Combine submittals of this Section with Sections listed below to ensure the "design intent" of the system/assembly is understood and can be reviewed together.

C. Product Data: Manufacturer's specifications and technical data including the following:

1. Detailed specification of construction and fabrication.
2. Manufacturer's installation instructions.
3. Submit 6 copies of catalog cuts with hardware schedule.
4. Provide 9001-Quality Management and 14001-Environmental Management for products listed in Materials Section 2.2

D. Shop Drawings - Hardware Schedule: Submit 6 complete reproducible copy of detailed hardware schedule in a vertical format.

1. List groups and suffixes in proper sequence.
2. Completely describe door and list architectural door number.
3. Manufacturer, product name, and catalog number.
4. Function, type, and style.
5. Size and finish of each item.
6. Mounting heights.
7. Explanation of abbreviations and symbols used within schedule.

E. Templates: Submit templates and "reviewed Hardware Schedule" to door and frame supplier and others as applicable to enable proper and accurate sizing and locations of cutouts and reinforcing.

F. Samples: (If requested by the Architect)

1. 1 sample of Lever and Rose/Escutcheon design, (pair).
2. 3 samples of metal finishes

G. Contract Closeout Submittals: Comply with Division 01 including specific requirements indicated.

1. Operating and maintenance manuals: Submit 3 sets containing the following.

a. Complete information in care, maintenance, and adjustment, and data on repair and replacement parts, and information on preservation of finishes.
b. Catalog pages for each product.
c. Name, address, and phone number of local representatives for each manufacturer.
d. Parts list for each product.

2. Copy of final hardware schedule, edited to reflect, "As installed".
3. Copy of final keying schedule

4. One set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

1.4 QUALITY ASSURANCE

A. Comply with Division 01.

1. Statement of qualification for distributor and installers.
2. Statement of compliance with regulatory requirements and single source responsibility.
3. Distributor's Qualifications: Firm with 3 years' experience in the distribution of commercial hardware.

a. Distributor to employ full time Architectural Hardware Consultants (AHC) for the purpose of scheduling and coordinating hardware and establishing keying schedule.
b. Hardware Schedule shall be prepared and signed by an AHC.

4. Installer's Qualifications: Firm with 3 years of experience in installation of similar hardware to that required for this Project, including specific requirements indicated.
5. Regulatory Label Requirements: Provide testing agency label or stamp on hardware for labeled openings.

B. Provide UL listed hardware for labeled and 20-minute openings in conformance with requirements for class of opening scheduled.

1. Underwriters Laboratories requirements have precedence over this specification where conflict exists.

2. Single Source Responsibility: Except where specified in hardware schedule, furnish products of only one manufacturer for each type of hardware.

C. Review Project for extent of finish hardware required to complete the Work. Where there is a conflict between these Specifications and the existing hardware, notify the Architect in writing and furnish hardware in compliance with the Specification unless otherwise directed in writing by the Architect.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Comply with Division 01.

1. Deliver products in original unopened packaging with legible manufacturer's identification.
2. Package hardware to prevent damage during transit and storage.
3. Mark hardware to correspond with "reviewed hardware schedule".
4. Deliver hardware to door and frame manufacturer upon request.

B. Storage and Protection: Comply with manufacturer's recommendations.

1.6 PROJECT CONDITIONS:

A. Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security, and similar requirements indicated, as necessary for the proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents.

B. Review Shop Drawings for doors and entrances to confirm that adequate provisions will be made for the proper installation of hardware.

1.7 WARRANTY:

A. Refer to Conditions of the Contract

B. Manufacturer's Warranty:

1. Closers: Ten years
2. Exit Devices: Five years
3. Locksets & Cylinders: Five years
4. All other Hardware: Two years

1.8 OWNER'S INSTRUCTION:

A. Instruct Owner's personnel in operation and maintenance of hardware units.

1.9 MAINTENANCE:

A. Extra Service Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 01 Closeout Submittals Section.

1. Special Tools: Provide special wrenches and tools applicable to each different or special hardware component.
2. Maintenance Tools: Provide maintenance tools and accessories supplied by hardware component manufacturer.
3. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage, and protection of extra service materials.

B. Maintenance Service: Submit for Owner's consideration maintenance service agreement for electronic products installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. The following manufacturers are approved subject to compliance with requirements of the Contract Documents. Approval of manufacturers other than those listed shall be in accordance with Division 01.

Item:	Manufacturer:	Approved:
Hinges	Stanley	Bommer, McKinney
Continuous Hinges	Stanley	Trimco, ABH
Spring Hinges	Bommer	McKinney
Mortise Locksets	Best 45H	Sargent
Deadbolt	Best 8T3	Sargent
Deadlock	Adams Rite	Accurate
Cylinders	Best (CORMAX)	Owner Standard
Closers	Best HD8000	Dorma 8900, Norton 7500
Push/Pull Bars & Grips	Trimco	Burns, Rockwood
Protection Plates	Trimco	Burns, Rockwood
Door Stops	Trimco	Burns, Rockwood
Flush Bolts	Trimco	ABH, Burns
Thresholds & Gasketing	National Guard	Reese, K.N. Crowder

2.2 MATERIALS:

A. Hinges: Shall be Five Knuckle Ball bearing hinges

1. Template screw hole locations
2. Bearings are to be fully hardened.
3. Bearing shell is to be consistent shape with barrel.
4. Minimum of 2 permanently lubricated non-detachable bearings on standard weight hinge and 4 permanently lubricated bearing on heavy weight hinges.
5. Equip with easily seated, non-rising pins.
6. Non-Removable Pin screws shall be slotted stainless steel screws.
7. Hinges shall be full polished, front, back and barrel.
8. Hinge pin is to be fully plated.
9. Bearing assembly is to be installed after plating.
10. Sufficient size to allow 180-degree swing of door
11. Furnish five knuckles with flush ball bearings
12. Provide hinge type as listed in schedule.
13. Furnish 3 hinges per leaf to 7-foot, 6-inch height. Add one for each additional 30 inches in height or fraction thereof.
14. Tested and approved by BHMA for all applicable ANSI Standards for type, size, function, and finish
15. UL10C listed for Fire rated doors.
16. Provide double-acting spring hinges as shown in hardware sets.

B. Geared Continuous Hinges:

1. Tested and approved by BHMA for ANSI A156.26-1996 Grade 1
2. Anti-spinning through fastener
3. UL10C listed for 3-hour fire rating

4. Non-handed
5. Lifetime warranty
6. Provide Fire Pins for 3-hour fire ratings
7. Sufficient size to permit door to swing 180 degrees

C. Mortise Type Locks and Latches:

1. Tested and approved by BHMA for ANSI A156.13, Series 1000, Operational Grade 1, Extra-Heavy Duty, Security Grade 2 and be UL10C.
2. Furnish UL or recognized independent laboratory certified mechanical operational testing to 4 million cycles minimum.
3. Provide 9001-Quality Management and 14001-Environmental Management.
4. Fit ANSI A115.1 door preparation
5. Functions and design as indicated in the hardware groups
6. Solid, one-piece, 3/4-inch (19mm) throw, anti-friction latchbolt made of self-lubricating stainless steel
7. Deadbolt functions shall have 1 inch (25mm) throw bolt made of hardened stainless steel
8. Latchbolt and Deadbolt are to extend into the case a minimum of 3/8 inch (9.5mm) when fully extended
9. Auxiliary deadlatch to be made of one-piece stainless steel, permanently lubricated
10. Provide sufficient curved strike lip to protect door trim
11. Lever handles must be of forged or cast brass, bronze or stainless-steel construction and conform to ANSI A117.1. Levers that contain a hollow cavity are not acceptable
12. Lock shall have self-aligning, thru-bolted trim
13. Levers to operate a roller bearing spindle hub mechanism
14. Mortise cylinders of lock shall have a concealed internal setscrew for securing the cylinder to the lockset. The internal setscrew will be accessible only by removing the core, with the control key, from the cylinder body.
15. Spindle to be designed to prevent forced entry from attacking of lever
16. Provide locksets with 7-pin removable and interchangeable core cylinders
17. Each lever to have independent spring mechanism controlling it

D. Cylindrical Deadbolt:
1. Tested and approved by ANSI A156.36, Operational Grade 1,
2. Fit modified ANSI A115.3 door preparation
3. Provide 9001-Quality Management and 14001-Environmental Management.
4. Locksets and cores to be of the same manufacturer to maintain complete lockset warranty
5. 2-3/4 inch (70mm) backset, or 2-3/8 inch backset as needed
6. 1-inch throw deadbolt
7. Provide locksets with 7-pin core.

E. Mortise Deadbolt:
1. Tested and approved by ANSI A156.36, Operational Grade 1.
2. Provide 9001-Quality Management and 14001-Environmental Management.
3. Locksets and cores to be of the same manufacturer to maintain complete lockset warranty
4. 2-3/4 inch (70mm) backset
5. 1 inch throw deadbolt
6. Provide locksets with 7-pin core.

F. Mortise Keypad Lock:
1. STD Mortise 1¼" (32 mm) face plate with auto deadbolt (non-handed)
2. ANSI/BHMA Grade 1
3. ASA 86 door preparation with three additional through-bore holes.

4. 3/4" (19 mm) latch, 1" (25 mm) deadbolt
5. 2-3/4” (70 mm) backset
6. Indoor/Outdoor approved; -31 °F (-35 °C) to 151 °F (66 °C)

G. Cylinders:

1. Provide the necessary cylinder housings, collars, rings & springs as recommended by the manufacturer for proper installation.
2. Provide the proper cylinder cams or tail piece as required to operate all locksets and other keyed hardware items listed in the hardware sets.
3. Coordinate and provide as required for related sections.

H. Door Closers shall:

1. Tested and approved by BHMA for ANSI 156.4, Grade 1
2. UL10C certified
3. Provide 9001-Quality Management and 14001-Environmental Management.
4. Closer shall have extra-duty arms and knuckles
5. Conform to ANSI 117.1
6. Maximum 2-7/16 inch case projection with non-ferrous cover
7. Separate adjusting valves for closing and latching speed, and backcheck
8. Provide adapter plates, shim spacers and blade stop spacers as required by frame and door conditions
9. Full rack and pinion type closer with 1-1/2 inch minimum bore
10. Mount closers on non-public side of door, unless otherwise noted in specification
11. Closers shall be non-handed, non-sized and multi-sized.

I. Door Stops: Provide a dome floor or wall stop for every opening as listed in the hardware sets.

1. Wall stop and floor stop shall be wrought bronze, brass, or stainless steel.
2. Provide fastener suitable for wall construction.
3. Coordinate reinforcement of walls where wall stop is specified.
4. Provide dome stops where wall stops are not practical. Provide spacers or carpet riser for floor conditions encountered

J. Pulls with plates: Provide with four beveled edges ANSI J301, 0.050 thickness Plates with ANSI J401 Pull as listed in hardware set. Provide proper fasteners for door construction.

K. Push Pull Bars: Provide ANSI J504, 1” Dia. Pull and push bar model and series as listed in hardware set. Provide proper fasteners for door construction.

L. Protection plates: Provide with four beveled edges ANSI J102, 10 inches high by width less 1 on pairs of doors or 2 inches on single doors. Furnish oval-head countersunk screws to match finish.

M. Seals: All seals shall be finished to match adjacent frame color. Seals shall be furnished as listed in schedule. Material shall be UL listed for labeled openings.

N. Weatherstripping: Provide at head and jambs only those units where resilient or flexible seal strip is easily replaceable. Where bar-type weatherstrip is used with parallel arm mounted closers install weatherstrip first.

1. Weatherstrip shall be resilient seal of (Neoprene, Polyurethane, Vinyl, Pile, Nylon Brush, Silicone)

2. UL10C Positive Pressure rated seal set when required.

O. Door Bottoms/Sweeps: Surface mounted or concealed door bottom, where listed in the hardware sets.

1. Door seal shall be resilient seal of (Neoprene, Polyurethane, Nylon Brush, Silicone)
2. UL10C Positive Pressure rated seal set when required.

P. Thresholds: Thresholds shall be aluminum beveled type with maximum height of 1/2" for conformance with ADA requirements. Furnish as specified and per details. Provide fasteners and screws suitable for floor conditions.

2.3 FINISH:

A. Designations used in Schedule of Finish Hardware - 3.05, and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18 including coordination with traditional U.S. finishes shown by certain manufacturers for their products.

B. Powder coat door closers to match other hardware, unless otherwise noted.

C. Aluminum items shall be finished to match predominant adjacent material. Seals to coordinate with frame color.

2.4 KEYS AND KEYING:

A. Provide keyed brass construction cores and keys during the construction period. Construction control and operating keys and core shall not be part of the Owner's permanent keying system or furnished in the same keyway (or key section) as the Owner's permanent keying system. Permanent cores and keys (prepared according to the accepted keying schedule) will be furnished to the Owner.

B. Cylinders, removable and interchangeable core system: Best CORMAX™ Patented 7-pin.

C. Permanent keys and cores: Stamped with the applicable key mark for identification. These visual key control marks or codes will not include the actual key cuts. Permanent keys will also be stamped "Do Not Duplicate."

D. Transmit Grand Master keys, Master keys and other Security keys to Owner by Registered Mail, return receipt requested.

E. Furnish keys in the following quantities:

1. 1 each Grand Master keys
2. 4 each Master keys
3. 2 each Change keys each keyed core
4. 15 each Construction Master keys
5. 1 each Control keys

F. The Owner, or the Owner's agent, will install permanent cores and return the construction cores to the Hardware Supplier. Construction cores and keys remain the property of the Hardware Supplier.

G. Keying Schedule: Arrange for a keying meeting, and programming meeting with Architect Owner and hardware supplier, and other involved parties to ensure locksets and locking hardware, are functionally correct

and keying and programming complies with project requirements. Furnish 3 typed copies of keying and programming schedule to Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of conditions: Examine doors, frames, related items and conditions under which Work is to be performed and identify conditions detrimental to proper and or timely completion.

1. Do not proceed until unsatisfactory conditions have been corrected.

3.2 HARDWARE LOCATIONS:

A. Mount hardware units at heights indicated in the following publications except as specifically indicated or required to comply with the governing regulations.

1. Recommended Locations for Builders' Hardware for Standard Steel Doors and Frames, by the Door and Hardware Institute (DHI).

2. Recommended locations for Architectural Hardware for flush wood doors (DHI).

3. WDMA Industry Standard I.S.-1A-04, Industry Standard for Architectural wood flush doors.

3.3 INSTALLATION:

A. Install each hardware item per manufacturer's instructions and recommendations. Do not install surface mounted items until finishes have been completed on the substrate. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

B. Conform to local governing agency security ordinance.

C. Install Conforming to ICC/ANSI A117.1 Accessible and Usable Building and Facilities.

1. Adjust door closer sweep periods so that from the open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the landing side of the door.

D. Installed hardware using the manufacturers fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use "Riv-Nuts" or similar products.

3.4 FIELD QUALITY CONTROL AND FINAL ADJUSTMENT

A. Contractor/Installers, Field Services: After installation is complete, contractor shall inspect the completed door openings on site to verify installation of hardware is complete and properly adjusted, in accordance with both the Contract Documents and final shop drawings.

1. Check and adjust closers to ensure proper operation.

2. Check latch set, lockset, and exit devices are properly installed and adjusted to ensure proper operation.

a. Verify levers are free from binding.
b. Ensure latch bolts and dead bolts are engaged into strike and hardware is functioning.

3. Report findings, in writing, to architect indicating that all hardware is installed and functioning properly. Include recommendations outlining corrective actions for improperly functioning hardware if required.

3.5 SCHEDULE OF FINISH HARDWARE:

Manufacturer List

Code	Name
AD	Adams Rite
BE	Best Access Systems
BM	Bommer Industries
CKN	K.N. Crowder
NA	National Guard
PR	Precision
ST	Stanley
TR	Trimco

Option List

Code	Description
4	1-3/4" Door Thickness
G	Back-to-Back Mounted
N	Thru-Bolt w/ Flow-Thru
CD	CYLINDER DOGGING
CSK	COUNTER SINKING OF KICK and MOP PLATES
BSHD	Blade Stop Spacer
C181	CAM-ADAMS RITE MS CAM
DP80	DP80 Drop Plate
NFHD	Shoe Support Angle Bracket
1 1/8"BS	1 1/8" Backset
B4E-HEAVY-KP	BEVELED 4 EDGES - KICK PLATES
1/4-20 SSMS/EA	STAINLESS MACHINE SCREWS/EXPANSION ANC.

Finish List

Code	Description
AL	Aluminum
130	RiteCoat Painted - Satin Aluminum
603	Zinc Plated
622	Flat Black Coated
626	Satin Chromium Plated
628	Satin Aluminum, Clear Anodized
630	Satin Stainless Steel
689	Aluminum Painted
GREY	Grey
US26D	Chromium Plated, Dull

Prefixes:

G = Grill Bldg.
R = Ranger Station
P = Pump House

Hardware Sets

TBD

END OF SECTION 08 71 00

SECTION 08 72 00

WEATHERSTRIPPING & SEALS (THRESHOLDS)

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Commercial Thresholds And Ramp Thresholds].

B. Related Sections:
1. Division 8 Section(s): Steel Doors, Wood Doors, Sound Control Doors, Aluminum Frame Storefront Doors.
2. Division 10 Section(s): Compartments and Cubicles, Partitions.
3. Division 13 Section(s): Special Facilities, Integrated Construction, Special Structures, Special Purpose Rooms.

1.2 REFERENCES

A. American National Standards Institute/Builders Hardware Manufacturers Association (ANSI/BHMA):
1. ANSI/BHMA A156.18: Materials and Finishes.
2. ANSI/BHMA A156.21 Thresholds.

B. Underwriters Laboratories, Inc. (UL):
1. UL 10B Fire Tests of Door Assemblies.
2. UL 10C Fire Tests of Door Assemblies.
3. UL 410 Slip Resistance for Floor Surface Materials.

C. Federal Government:
1. U.S. Architectural & Transportation Barriers Compliance Board. Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG), 1992.
2. Federal Standard FED-STD-795-1988 (Revised 1989) Uniform Federal Accessibility Standards.
3. Federal Specification P-F-430C Finish, Floor, Water Emulsion (for Use On Light Colored Floors).

D. International Code Council (ICC):
1. UBC 7-2 Fire Test of Door Assemblies (Positive Pressure).
2. International Building Code (IBC) Code 2000 (Positive Pressure).
3. ICC/ANSI A117.1 Accessible and Usable Buildings and Facilities.

1.3 SYSTEM DESCRIPTION

A. Design Requirements: Provide threshold and seal products which have been manufactured, fabricated and installed to meet the following design criteria:
1. Performance obtained from test procedures [UL 10B] [UL 10C] [ICC/ANSI A117.1].

2. Compliant with UL 410.
3. Compliant with ADA standards.

1.4 SUBMITTALS

A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal, Section 013000.

B. Product Data: Submit manufacturer's product data and installation instructions.

C. Shop Drawings: Provide drawings indicating required component locations, interface with adjacent materials, installation, anchorage, fastening and similar information.

D. Samples: Submit one each of manufacturer's standard selection samples.

E. Quality Assurance/Control Submittals: Submit the following:
1. Test Reports: Upon request, submit Durability test reports from recognized testing laboratory.
2. Certificates: Submit manufacturer's certificate that products meet or exceed specified requirements.

F. Closeout Submittals: Submit the following:
1. Warranty documents specified herein.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Utilize an installer having demonstrated experience on projects of similar size and complexity.

B. Field Samples: 6" sample of each type.

1.6 DELIVERY, STORAGE & HANDLING

A. General: Comply with Division 1 Product Requirement Section.

B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

C. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at and at temperature and humidity conditions recommended by the manufacturer.

1.7 WARRANTY

A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.

B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under contract documents.

1. Warranty Period (Standard Products): 3 years against defects in materials or workmanship, beginning with Date of Substantial Completion.
2. Warranty Period (PemKote Finish): 10 years against defects in materials or workmanship, beginning with Date of Substantial Completion.
3. Warranty Period (Recycled Rubber Ramps): 5 years against defects in materials or workmanship, beginning with Date of Substantial Completion.

1.8 MAINTENANCE

A. Extra Materials: Provide additional material for use by owner in building maintenance and repair. [Specify number of units or percentage.].

PART 2 PRODUCTS

2.1 THRESHOLDS

A. Manufacturer: Pemko Manufacturing Company.
   1. Contact: PO Box 3780, 4226 Transport Street, Ventura, CA 93003; Telephone: (800) 283-9988, (805) 642-2600; Fax: (805) 642-4109; E-mail: pemkosales@pemko.com; website: www.pemko.com.

B. Proprietary Products/Systems: Thresholds, including the following:
   1. Half Saddles/Offset Saddles:
      a. Material: Extruded tempered aluminum 6063-T6.
      b. Finish (ANSI/BHMA 156.18): Mill finish aluminum.
      c. Manufacturer Model Number:
         1) Pemko 157 offset saddle threshold (3/4" to ¼") for existing construction areas;
         2) Pemko 158 Offset saddle threshold (1/2" to ¼") for new work areas.
   2. Saddle/Offset Thresholds:
      a. Material: Extruded tempered aluminum 6063-T6.
      b. Finish (ANSI/BHMA 156.18): Mill finish aluminum.
      c. Manufacturer Model Number: Specify manufacturer model number – TBD if require.
   3. Elevator Thresholds:
      a. Material: Extruded tempered aluminum 6063-T6.
      b. Finish (ANSI/BHMA 156.18): Mill finish aluminum.
      c. Manufacturer Model Number: Specify manufacturer model number – TBD if required.
   4. Floor Plate Supports and Accessories:
      a. Material: Extruded tempered aluminum 6063-T6.
      b. Finish (ANSI/BHMA 156.18): Mill finish aluminum.
      c. Expansion Joint: Cork.
      d. Width: Specify width..
      e. Manufacturer Model Number: [Specify manufacturer model number – TBD if required.].
   5. Floor Plates and Safety Treads:
      a. Material: Extruded tempered aluminum 6063-T6.
      b. Finish (ANSI/BHMA 156.18): Mill finish aluminum.

c. Width: [Specify width.].
d. Manufacturer Model Number: Specify manufacturer model number – TBD if required..

6. Aluminum Plates:
a. Material: Extruded tempered aluminum 6063-T6.
b. Finish (ANSI/BHMA 156.18): Mill finish aluminum.
c. Width: Specify width..
d. Manufacturer Model Number: Specify manufacturer model number – TBD if required.

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

A. Comply with the instructions and recommendations of the threshold manufacturer.

3.2 EXAMINATION

A. Site Verification of Conditions:
1. Verify that site conditions are acceptable for installation of thresholds.
a. Examine doors and frames for compliance with requirements for door and frame manufacturer's installation tolerances, labeled fire door assembly construction, wall and floor construction and other conditions affecting performance.
2. Do not proceed with installation of thresholds until unacceptable conditions are corrected.

3.3 INSTALLATION

A. Mounting Location: Comply with drawings and approved shop drawings.

B. Adjust and reinforce attachment substrates as necessary for proper installation and operation.

C. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

D. Rubber Ramps: Install using "Liquid Nails" per manufacturer's installation instructions.

3.4 ADJUSTING

A. Perform adjustments required to ensure that thresholds function in compliance with manufacturer's performance criteria prior to acceptance by Owner.

3.5 CLEANING

A. Remove any protective films and clean components as necessary following manufacturer's recommended procedures.

3.6 PROTECTION

A. Protect installed work from damage due to subsequent construction activity on the site.

END OF SECTION 08 72 00

SECTION 08 80 00

GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:

1. Glass for **windows**, **doors**, and **storefront framing**.
2. Spandrel glazing.
3. Glazing sealants and accessories.

B. Related Requirements:

1. Section 088300 "Mirrors."

1.3 DEFINITIONS

A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.

C. IBC: International Building Code.

D. Interspace: Space between lites of an insulating-glass unit.

E. Monolithic glass & coating orientation.
1. Surface 1: Exterior surface (surface facing outdoors)
2. Surface 2: Interior surface (surface facing indoors)

F. Insulated Glass Unit & coating orientation.
1. Surface 1: Exterior surface of outer lite (surface facing outdoors of outboard lite)
2. Surface 2: Interior surface of outer lite (surface facing indoors of outboard lite)
3. Surface 3: Exterior surface of inner lite (surface facing outboard lite)
4. Surface 4: Interior surface of inner lite (surface facing indoors of inboard lite)

G. Spandrel glass: Glass that has been rendered opaque with a water-based silicone elastomeric spandrel coating for non-vision applications.

1.4 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

C. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For **Installer** and **manufacturers of insulating-glass units with sputter-coated, low-E coatings**.

B. Product Certificates: For glass.

C. Product Test Reports: For **insulating glass and glazing sealants**, for tests performed by a qualified testing agency.

1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.

D. Preconstruction adhesion and compatibility test report.

E. Sample Warranties: For special warranties.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved **and certified** by coated-glass manufacturer.

B. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

C. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.

D. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F.

1.10 WARRANTY

A. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: [**10**] years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Glass: Obtain from single source from single manufacturer for each glass type.

1. Obtain reflective-coated glass from single source from single manufacturer.

B. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

2.2 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the IBC and ASTM E 1300.

1. Design Wind Pressures: As indicated on Drawings.
2. Design Wind Pressures: Determine design wind pressures applicable to Project according to ASCE/SEI 7, based on heights above grade indicated on Drawings.
   a. Wind Design Data: As indicated on Drawings.
   b. Basic Wind Speed: **150 mph Risk Category II**.
   c. Importance Factor: **1.0**.
   d. Exposure Category: **B**.

3. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch, whichever is less.

C. Windborne-Debris-Impact Resistance: Exterior glazing shall comply with **basic**-protection testing requirements in ASTM E 1996 for **Wind Zone 4** when tested according to ASTM E 1886. Test specimens shall be no smaller in width and length than glazing indicated for use on Project and shall be installed in same manner as glazing indicated for use on Project.

1. Large-Missile Test: For glazing located within 30 feet of grade.
2. Small-Missile Test: For glazing located more than 30 feet above grade.

D. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

E. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites **6 mm thick**.
   a. Spandrel Coating Orientation: Surface #2
2. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
   a. Spandrel Coating Orientation: Surface #2 or #4
   b. Coating must be cut back for sealant adhesion.
3. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F.
4. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
5. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.3 GLASS PRODUCTS, GENERAL

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. GANA Publications: **"Laminated Glazing Reference Manual" and** "Glazing Manual."

2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of **the SGCC or another certification agency acceptable to authorities having jurisdiction or manufacturer**. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.

D. Thickness: Where glass thickness is indicated, it is a minimum. **Provide glass that complies with performance requirements and is not less than the thickness indicated.**

1. Minimum Glass Thickness for Exterior Lites: **6 mm**.

E. Strength: Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 GLASS PRODUCTS

A. Clear Annealed Float Glass: ASTM C 1036, Type I, Class 1 (clear), Quality-Q3.

B. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear), Quality-Q3.

2.5 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190.

1. Sealing System: Dual seal, with **manufacturer's standard** primary and secondary sealants.
2. Perimeter Spacer: **Manufacturer's standard spacer material and construction**.
3. Desiccant: Molecular sieve or silica gel, or a blend of both.

2.6 GLAZING SEALANTS

A. General:

1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. Colors of Exposed Glazing Sealants: **As indicated by manufacturer's designations**.

B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT.

1. Clear, non-sag.

2.7 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:

1. AAMA 804.3 tape, where indicated.
2. Size tape so that it is under compression when glazing is fully installed.

2.8 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, with requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

F. Dense Compression Gaskets: Preformed neoprene, complying with ASTM C 864.

1. Select style and size so that soft gasket will be compressed at least 25 percent when glazing is fully installed.

G. Soft Compression Gaskets: Black, preformed closed cell neoprene, complying with ASTM C 509, Type II; shape and density to maintain seal.

1. Sealant tape may be used in lieu of soft gaskets, at contractor's option.

H. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.9 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

a. Temperature Change: **120 deg F, ambient; 180 deg F, material surfaces**.

B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.

C. Grind smooth and polish exposed glass edges and corners.

D. Cut glass to size and shape and drill holes prior to tempering.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:

1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Presence and functioning of weep systems.
3. Minimum required face and edge clearances.
4. Effective sealing between joints of glass-framing members.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

F. Provide spacers for glass lites where length plus width is larger than 50 inches.

1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until right before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant.

G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply cap bead of elastomeric sealant over exposed edge of tape if fixed stop in located on exterior.

3.5 GASKET GLAZING (DRY)

A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

E. Install gaskets so they protrude past face of glazing stops.

F. On spandrel glass gaskets and setting blocks shall be made of silicone.

3.6 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

D. On spandrel glass, a non-acidic sealant should be used. Sealants or bonding materials with acidic or hydrocarbon-based thinners cannot be used.

E. High Performance Coatings for a complete list of approved sealants and

F. glazing material.

3.7 CLEANING AND PROTECTION

A. Immediately after installation remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.

1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

C. Remove and replace glass that is damaged during construction period.

D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.8 MONOLITHIC GLASS SCHEDULE

A. Glass Type **GL-<1>**: Clear **annealed**, **heat-strengthened**, or **fully tempered** float glass – Interior.

1. Minimum Thickness: **6 mm**.
2. Safety glazing required.
3. Opacity Coating required in some applications – Spandrel.

3.9 INSULATING GLASS SCHEDULE

A. Glass Type **GL-<2>**: Clear Window Insulating Impact Resistant Glass - Exterior

1. Basis-of-Design Product: **Quaker; M700 Series**.
2. Overall Unit Thickness: Commercial Framing System
   a. 5'' main frame
   b. 0.070 extruded wall thickness of frame
   c. 0.062'' extruded wall thickness of sash
   d. Frames shipped K.D
3. Minimum Thickness of Each Glass Lite: **6 mm**.
4. Thermally Enhanced Design:
   a. Azon pour and debridge thermal break is ½'' wide in all main frame and vent rail extrusions
   b. Internal weep system for effective water damage
   c. Steel Roller System
   d. Mitered panels with heavy-duty corner keys
5. Outdoor Lite: **Impact Resistant** glass.
6. Interspace Content: **Argon**.
7. Indoor Lite: **Fully tempered** glass.
8. U-Value (ranges based on multiple Low-E/Argon combinations) 0.36-0.4
9. SHGC (ranges based on multiple Low-E/Argon combinations) 0.14-0.49
10. Safety glazing required.
    a. NAFS Rating AW-PG50-SD
    b. Design Pressure 50.13
    c. Air at 50 MPH (cfm/ft2
    d. Water (No Penetration) P.S.F. 12.11
    e. Missile Level D

B. Glass Type **GL-<3>**: Clear Door Lite Insulating Impact Resistant Glass.

1. Basis-of-Design Product: **Special-Lite FRP Fixed Window Frame**.
2. Overall Unit Thickness: Standard pultruded frame section, 5-3/4" x 2", is constructed to have four (4) sides.
3. Minimum Thickness of Each Glass Lite:
   a. Interior: 1/8" x 0.030" x 1/8", unless otherwise indicated
   b. Exterior: No less than 6.0 mm 1/4" if provided by FRP Door manufacturer.
4. Outdoor Lite: [**Impact Resistant**] glass.
5. Interspace Content: **Air** or **Argon**.
6. Indoor Lite: **Fully tempered** glass.
7. Center of Glass U-Value: 0.29 maximum.
8. Assembly U-Value: 0.46 maximum.
9. Solar Heat Gain Coefficient: 0.25 maximum.
10. Shading Coefficient: 0.2.
11. Visible Light Transmittance: 23 percent.
12. Exterior Reflectance: 6 percent.
13. Provide safety glazing labeling

END OF SECTION 08 80 00

SECTION 09 26 00

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Gypsum board and joint treatment.
2. Exterior sheathing.
3. Tile backer board.
4. Acoustic insulation.

B. Related Requirements:
1. Section 054000 - Cold-Formed Metal Framing: Exterior wall & soffit framing.
2. Section 061000 - Rough Carpentry: Wood framing and blocking for support of.
3. Section 072100 - Batt Insulation: Thermal insulation.

1.2 REFERENCE STANDARDS

A. ASTM International:
1. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
2. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board.
3. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
4. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members.
5. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
6. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
7. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board.
8. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
9. ASTM C1002 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases.
10. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.
11. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel.
12. ASTM C1280 - Standard Specification for Application of Gypsum Sheathing.
13. ASTM C1288 - Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets.
14. ASTM C1325 - Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cement Substrate Sheets.
15. ASTM C1396/C1396M - Standard Specification for Gypsum Board.

16. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
17. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
18. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
19. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

B. American Society of Civil Engineers:
1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

C. California Department of Health Services:
1. CA/DHS/EHLB/R-174 - Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.

D. Gypsum Association:
1. GA 214 - Recommended Levels of Gypsum Board Finish.
2. GA 216 - Application and Finishing of Gypsum Board.
3. GA 600 - Fire Resistance Design Manual Sound Control.

E. Intertek Testing Services (Warnock Hersey Listed):
1. WH - Certification Listings.

F.National Fire Protection Association:
1. NFPA 265 - Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Coverings on Full Height Panels and Walls, Method B.
2. NFPA 286 - Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Wall and Ceiling Interior Finish.

G. South Coast Air Quality Management District:
1. SCAQMD Rule 1168-January 7, 2005 - Adhesive and Sealant Applications.

H. Underwriters Laboratories Inc.:
1. UL - Fire Resistance Directory.

1.3 PRE-INSTALLATION MEETINGS

A. Section 013000 - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing work of this section.

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data on metal framing, gypsum board, joint tape; and acoustic accessories.

C. Shop Drawings:
1. Indicate special details associated with fireproofing, and acoustic seals.

2. Indicate installation details required for seismic design loads.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with ASTM C840. ASTM C1280, GA-214, GA-216 and GA-600.

B. Fire Rated Wall Construction: Rating as indicated on Drawings in conjunction with Sections 054000 “Cold Formed Metal Framing” and 061050 “Rough Carpentry”, respectively.
1. Tested Rating: Determined in accordance with ASTM E119.
2. Fire Rated Partitions: Listed assembly by UL (see drawings for UL nos.).

C. Surface Burning Characteristics:
1. Textile Wall Coverings: Comply with one of the following:
a. Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.
b. Requirements of applicable code when tested in accordance with NFPA 265 Method B test protocol.
c. Requirements of applicable code when tested in accordance with NFPA 286.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with documented experience.

B. Installer: Company specializing in performing Work of this section with documented experience.

PART 2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

A. Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
1. Gold Bond.
2. United States Gypsum.
3. Georgia Pacific.
4. Substitutions: Section 016000 - Product Requirements.

2.2 COMPONENTS

A. Gypsum Board Materials: ASTM C1396/C1396M; Type X fire resistant.
1. Fire Rated Gypsum Board: ASTM C1396; fire resistive type, UL rated:
a. 5/8-inch-thick
b. maximum available length in place
c. ends tapered
2. Fire Rated Mold and Moisture Resistant Gypsum Board: ASTM C36; fire resistive type, UL rated:
a. 5/8-inch-thick
b. maximum available length in place

c. ends tapered
d. Products:
1) USG: 5/8” Mold Tough Firecorde C
2) Certainteed: 5/8” ProRoc Mold and Moisture Resistant Type X.
3) National Gypsum: 5/8” XP, Fire-Shield C

3. Exterior Sheathing Board: ASTM C1396
a. 5/8” thick.
b. Products:
1) a. USG, Securock.
2) b. Georgia Pacific DensGlas.

B. Tile Backer Boards:
1. Glass Mat Gypsum Tile Backer Board: ASTM C1178/C1178M
a. 5/8-inch-thick
b. Type X fire resistant
c. maximum available length in place
d. ends tapered
e. mold resistant.
2. Fiber Cement Tile Backer Board: ASTM C1288
a. 5/8-inch-thick
b. mold resistant.
3. Tile Backer Board Joint Tape: 2-inch-wide, coated glass fiber tape for joints and corners.

2.3 ACCESSORIES

A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, un-faced, 6 inches thick.

B. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.

C. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

D. Gypsum Board Accessories: ASTM C1047; metal; corner beads, edge trim, and expansion joints.
1. Metal Accessories: Zinc.
2. Edge Trim: Type L bead.

E. Joint Materials: GA-216; reinforcing tape, joint compound, and water.
1. For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
2. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
3. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.
4. Fill Coat: For second coat, use drying-type, all-purpose compound.
5. Finish Coat: For third coat, use drying-type, all-purpose compound.
6. Joint Tape:
a. Interior Gypsum Board: Paper.

b. Tile Backing Panels: As recommended by panel manufacturer

7. Joint Compound for Tile Backing Panels:
   a. Glass-Mat, Water-Resistant Backing Panel as recommended by backing panel manufacturer.

F.Textured Finish Materials: Latex based texturing material.

G. Gypsum Board Screws: ASTM C954, ASTM C1002; length to suit application.
   1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.

H. Gypsum Board Nails: ASTM C514 or ASTM F1667; blued steel wire, deformed shank; length to suit application.

I. Plate Blocking: 14-gauge steel.

J. Exterior Sheathing Tape: 2” wide 10 x 10 woven thread per inch, self-adhering fiberglass joint tape.

PART 3 EXECUTION

3.1 EXAMINATION

A. Sections 017300 and 017700 – “Execution” and “Closeout Procedures”: Requirements for installation examination.

B. Verify site conditions are ready to receive work and opening dimensions are as indicated on shop drawings.

3.2 INSTALLATION

A. Stud Installation:
   1. Install acoustical sealant under floor track of all studs.
   2. Stud Spacing: refer to drawings.
   3. Refer to Drawings for indication of partitions extending stud framing through ceiling to structure above. Maintain clearance under structural building members to avoid deflection transfer to studs. Provide extended leg ceiling runners.
   4. Door Opening Framing: Install double studs at doorframe jambs.
   5. Blocking: Nail wood blocking to studs. Install blocking for support of plumbing fixtures, toilet partitions, wall cabinets, wood frame opening, toilet accessories, hardware, and other accessories.
   6. Install bridging at 1/3 points.

B. Wall Furring Installation:
   1. Erect wall furring for direct attachment to walls.
   2. Erect furring channels horizontally; space maximum 16 inches oc, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.

3. Erect metal stud framing tight to concrete masonry walls, attached by adjustable furring brackets.

C. Furring For Fire Ratings: Install furring as required for fire resistance ratings indicated.

D. Ceiling Framing Installation:
1. Install ceiling framing independent of walls, columns, and above ceiling work.
2. Reinforce openings in ceiling suspension system which interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 24 inches past each end of openings.
3. Laterally brace entire suspension system.
4. Install 1-1/2” metal channels at max. 48” o.c. and 7/8” furring channels at 16” o.c.

E. Gypsum Board Installation:
1. Install gypsum board in accordance with GA-216 and GA-600.
2. Erect single layer gypsum board in most economical direction, with ends and edges occurring over firm bearing.
3. Erect single layer fire rated gypsum board vertically, with edges and ends occurring over firm bearing.
4. Erect exterior gypsum sheathing in accordance with ASTM C1280 and manufacturer's recommendations, horizontally, with edges butted and ends occurring over firm bearing.
5. Use screws when fastening gypsum board to metal furring or framing.
6. Tape all joints on exterior gypsum sheathing with 2" wide 10 x 10 woven threads per inch, self-adhering fiberglass joint tape.
7. Double Layer Applications: Secure second layer to first with fasteners.
8. Place second layer perpendicular to first layer. Offset joints of second layer from joints of first layer.
9. Treat cut edges and holes in moisture resistant gypsum board and exterior gypsum sheathing with sealant.
10. Place control joints consistent with lines of building spaces as indicated on Drawings.
11. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.
12. Install reveals moldings at locations indicated on Drawings.
13. All rated and smoke walls shall be stenciled above the ceiling with the rating of the wall.
14. Install control joints at maximum 30’ o.c. Location by Architect.

F.Joint Treatment:
1. Finish in accordance with GA-214 Level 4.
2. Fill and finish joints and corners of cementitious backing board.

G. Texture Finish: Light Texture.

H. Exterior Sheathing Installation:
1. Apply sheathing perpendicular or parallel to framing with smooth side towards exterior. Fit ends closely.
2. Install fasteners in accordance with manufacturer’s recommendations.
3. Caulk all joints.
4. Tape all joints with 2” wide fiberglass tape.

3.3 ERECTION TOLERANCES

A. Section 0173000 - Quality Assurance: Tolerances.

B. Maximum Variation of Finished Gypsum Board Surface from Flat Surface: 1/8 inch in 10 feet.

3.4 SCHEDULES

A. Material:

Location	Type
1. Toilet Rooms and Kitchens Janitor Closets, Mechanical Rooms	Mold Resistant Gypsum Bd.
2. Ceilings and Furr Downs	Fire-Rated Gypsum Board
3. Walls	Fire-Rated Gypsum Board
4. Tile Walls	Cement Backer Board Substrate
5. Exterior Tile Walls	Glass Mat Gypsum
6. Exterior Walls	Exterior Gypsum

B. Finishes:
1. Gypsum Board Walls and Ceilings: GA. 214 Level 4

END OF SECTION 09 26 00

SECTION 09 30 00

TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Furnish labor, materials, tools and other equipment, and services necessary to provide surface preparation and the application of tile work, including all components and accessory items required for a complete installation.

B. Section Includes:

1. Ceramic mosaic tile.
2. Porcelain tile.
3. Stone mosaic tile
4. Glazed wall tile.
5. Tile backing panels.
6. Waterproof membrane [**for thinset applications**].
7. Crack isolation membrane.
8. Metal edge strips.
9. Surface preparation materials.
10. Setting materials.
11. Adhesives and primers.
12. Grout materials.
13. Self-leveling underlayment.
14. Flexible sealant.
15. Sound reduction membrane
16. Penetrating grout sealers.
17. Penetrating stone, tile and grout sealers.
18. Topical stone sealer and finishes.
19. Stone, tile and grout maintenance, cleaners and grout haze removers.

C. Work under this Section also includes moisture and alkalinity testing, and surface preparation of substrates as required for acceptance of tile, including but not necessarily limited to, cleaning, small crack repair, patching, filling, any other work required to provide an appropriate substrate.

1.3 RELATED SECTIONS

A. Section 06 11 00 – Wood Framing.

B. Section 06 11 00 – Sheathing.

C. Section 07 14 00 – Fluid-Applied Waterproofing.

D. Section 09 28 00 – Backing Boards and Underlayments.

E. Section 09 30 00 – Tiling.

F. Section 09 30 33 – Stone Tiling.

G. Section 09 34 00 – Waterproofing-Membrane Tiling.

H. Section 09 31 33 – Thin-Set Stone Tiling.

I. Section 09 75 00 – Stone Facing.

1.4 REFERENCE STANDARDS

A. American National Standards Institute

1. ANSI A108 Series: Specifications for Installation of Ceramic Tile
2. ANSI A118 and A137.1 Series: Specifications for Materials
3. American Society For Testing Materials (ASTM) International

B. ASTM C 1028: Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.

1. ASTM C144 – Standard Specification for Aggregate for Masonry Mortar. (Jobsite Mix)
2. ASTM C150 – Standard Specification for Portland Cement. (Jobsite Mix)
3. ASTM C109/C109M – Standard Test Method for Compressive Strength of Hydraulic Cement Mortars. (Using 2-inch [50-mm] Cube Specimens).
4. ASTM C616 – Standard Specification for Quartz-Based Dimension Stone.

C. Tile Council of North America, Inc. (TCNA)

1. Handbook for Ceramic Tile Installation. Latest Edition.

D. NSI (DSDM) – Dimension Stone Design Manual; Natural Stone Institute.

E. TTMAC – Specifications Guide 09 30 00 Tile Installation Manual.

F. International Organization for Standardization (ISO):

G. ISO 13007 – Ceramic tiles – Grout and adhesives.

H. This specification shall be supplemented by any applicable federal, state and local building codes, guidelines, regulations, and standards adopted in the immediate geographic area of the Project; insurance rating organizations; including all other Authorities Having Jurisdiction.

1.5 DEFINITIONS

A. General: Definitions in the ANSI A108 Series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.

B. Module Size: Actual tile size plus joint width indicated.

C. Face Size: Actual tile size, excluding spacer lugs.

1.6 PERFORMANCE REQUIREMENTS

A. Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ANSI 137.1/DCOF Acutest: Dynamic coefficient of friction minimum 0.42 level surfaces and 0.45 ramps.

1.7 ACTION SUBMITTALS

A. Submit items in accordance with Division 01 Section “Submittal Procedures.”

B. Product Data: For each type of product indicated, submit one (1) copy of manufacturers’ product data, installation instructions and accessories specified and/or required by manufacturer.

C. Provide proof of job specific minimum 25-year tile system warranty.

D. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

E. Samples of Verification:

1. One full-size unit of each type and composition of tile and for each color and finish required. Samples should be no larger than 12x12 unless requested otherwise. For ceramic mosaic tile in color blend patterns, provide full sheets of each color blend.
2. One full-size unit of each type of trim and accessory for each color and finish required.
3. One threshold in 6-inch length for each color and finish required.
4. One metal edge strip in 6-inch length.
5. Color samples for selection of grout.

F. Installation Instructions: Manufacturer's printed instructions for each product.

G. Maintenance Data: Include recommended cleaning methods, cleaning materials, and maintenance coatings.

1.8 CLOSEOUT SUBMITTALS

A. Include maintenance and product data for all items installed.

B. Tile Installation System Warranty: Contractor shall obtain required information to meet manufacturers' claim requirements, i.e., proof of purchase, Installer information and any additional requirements.

1.9 MAINTENANCE MATERIALS SUBMITTALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.

B. Maintenance Materials: Contractor to coordinate with Owner the quantity of extra materials, from the same production runs as products installed, for use in maintenance of Project.

1.10 QUALITY ASSURANCE

A. Installer Qualifications: Verify Installer is qualified and approved by Manufacturer/Supplier, with a minimum of five years of continuous, uninterrupted experience in successfully installing work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance, and who agrees to employ only skilled tradesmen with a minimum of five years' experience.

B. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer verifying tile has been produced to meet requirements for ANSI 137.1.

C. Product Certificates: For each type of product, signed by product manufacturer.

D. Material Test Reports: For each tile-setting and grouting product.

E. Source Limitations for Tile: Obtain tile of each type and color or finish from one source or producer.

1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.

F. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from one manufacturer and each aggregate from one source or producer.

G. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer for each product:

1. Solid surface thresholds
2. Waterproof membrane
3. Crack isolation membrane
4. Joint sealants
5. Metal edge strips

H. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockup of each type of floor tile installation.
2. Build mockup of each type of wall tile installation.
3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

I. Mock-Up Testing: Areas to receive waterproof membrane shall be tested for a minimum of 24 hours or longer as recommended by manufacturer to determine if watertight. Coordinate with waterproof membrane installation section.

J. Preinstallation Conference: Conduct conference at Project site prior to commencement of field installation with Contractor, Subcontractor, Architect/Designer and others, as required.

1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.11 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

C. Store aggregates where grading and other required characteristics can be maintained, and contamination can be avoided.

D. Store liquid materials in unopened containers and protected from freezing.

E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.12 PROJECT CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

B. Provide tile complying with Standard grade requirements unless otherwise indicated.

C. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.

D. FloorScore Compliance: Tile for floors shall comply with requirements of FloorScore Standard.

E. In-Field Blending: For tile exhibiting color variations within ranges approved during Sample submittals, Installer shall blend tile in field by pulling tiles from several different packages to blend colors and to match Architect approved Samples.

F. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.

1. Where tile is indicated for installation in swimming pools, on exteriors or in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.

G. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with continuous film of temporary protective coating specified by tile manufacturer. Do not coat unexposed tile surfaces.

2.2 TILE PRODUCTS

A. For each tile type, manufacturer, series, color and sizes, see Finish Materials Listing in Finish Schedule and Legend in Drawing A6.0, depicted in Enlarged Plans, Drawing A2., and in Interior Elevations, Drawing A6.1.

1. Basis of Design Dal-Tile Corporation.
   7834 C.F. Hawn Freeway, Dallas Texas 75217
   1.800.933.TILE; Contact Us | Daltile
2. Porcelain Floor Tile – Keystone
   a. 1” square Mosaic in Artic White D617 Field
   b. 1” square in Sea Speckle D372 Accent
   c. SB1118 boarder in only the two colors specified.
3. Wall Stone Mosaic TILE – Sublimity
   a. 3” square Mosaic in Restore Sequence SB64 Restrooms
   b. 3” square Mosaic in Strength Sequence SB67 Bar

B. Waterproofing membranes, crack isolation membranes, setting materials and grout materials are part of a warrantied tile installation system. Coordinate requirements for warranty with manufacturer.

2.3 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent hard surface floor finishes at specified door openings. See Floor Transition Details in Finish Drawings.

1. Beveled Edge Type: Maximum 1:2 slope, with lower edge of bevel aligned with or up to 1/16-inch above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/4-inch or less above adjacent floor surface.

B. Solid-Surfacing Material Thresholds: Homogeneous solid strips of filled plastic resin complying with ISSFA-2. Provide Standard type.

1. See Finish Materials Listing and Floor Transition Details in the Finish Drawings.

2.4 WATERPROOF MEMBRANE

A. General: Manufacturer's standard product, selected from the following that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Fluid-Applied Membrane (Floors and walls at Toilet Areas; Janitor Closets; Vending Areas): Liquid-latex rubber or elastomeric polymer.

1. Products: Subject to compliance with requirements, provide the following:

a. Custom Building Products; RedGard Waterproofing and Crack Prevention Membrane
b. Laticrete International, Inc.; Hydroban
c. Mapei Corporation; Mapelastic AquaDefense

2.5 CRACK ISOLATION MEMBRANE

A. General: Manufacturer's standard product, selected from the following, that complies with ANSI A118.12 for high performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Fluid-Applied Membrane: Liquid-latex rubber or elastomeric polymer

1. Products: Subject to compliance with requirements, provide the following:

a. Custom Building Products; RedGard Waterproofing and Crack Prevention Membrane with reinforcing fabric and accessories.

b. Laticrete International, Inc.; 9235 Waterproofing Membrane with reinforcing fabric and accessories.
c. Mapei Corporation; Mapelastic AquaDefense with reinforcing fabric membrane and Mapeband accessories.

2.6 VAPOR REDUCTION COATINGS:

A. Provide the following, as required, to meet ASTM F-1869 and ASTM F-710 for moisture vapor compliance.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Custom Building Products: CMVC Moisture Vapor and Alkalinity Barrier
b. Laticrete International, Inc.: NXT
c. Mapei Corporation: Planiseal EMB/VS

2.7 SELF-LEVELING UNDERLAYMENT:

A. Applications:

1. Tiles with at least one side larger than 15".

B. Products:

1. Custom Building Product: Levelquik RS
2. Laticrete International, Inc.: NST Level Plus
3. Mapei Corporation: Novaplan Easy

2.8 SETTING MATERIALS

A. Latex-Portland Cement Mortar (Thin-Set and Medium-Bed): ANSI A118.4

1. Products: Subject to compliance with requirements, provide one of the following:

a. Custom Building Products:

1) Thin-Set: FlexBond Crack Prevention Mortar
2) Medium-Bed: Megalite Crack Prevention Mortar

b. Laticrete International, Inc.:

1) Thin-Set: No. 254R Platinum
2) Medium-Bed: 255 Multimax
3) Glass Tile Applications: Glass Tile Adhesive Mortar

c. Mapei Corporation

1) Thin-Set: Ultraflex
2) Medium-Bed Floor Applications: Ultracontact
3) Medium-Bed, Large Format, Floor and Wall Applications: Ultraflex LFT

2. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSIA118.4

2.9 GROUT MATERIALS

A. Water-Cleanable Epoxy Grout: ANSI A118.3 with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Custom Building Products; CEG-Lite 100% Solids Commercial Epoxy Grout
b. Laticrete International, Inc.; Spectra LOCK PRO Grout
c. Mapei Corporation; Kerapoxy CQ

2.10 ELASTOMERIC SEALANTS

A. General: Provide sealants, primers, backer rods, and other sealant accessories that comply with the following requirements and with the applicable requirements in Division 07 Section "Joint Sealants."

1. Use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Use primers, backer rods, and sealant accessories recommended by sealant manufacturer.

B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints unless otherwise indicated.

C. One-Part, Mildew-Resistant Silicone Sealant: ASTM C 920; Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide, intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and extreme temperatures.

1. Products:

a. Laticrete International, Inc.: Latisil
b. Custom Building Products: Commercial 100% Silicone Caulk
c. Mapei Corporation Mapesil

D. Multipart, Pourable Urethane Sealant for Use T: ASTM C 920; Type M; Grade P; Class 25; Uses T, M, A, and, as applicable to joint substrates indicated, O.

1. Products: Subject to compliance with requirements, provide sealants recommended by tile installation systems' warranty manufacturer which maintains warranty.

2.11 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, Portland cement-based formulation provided or approved by manufacturer of tile-setting materials for warrantied installation systems indicated.

B. Metal Edge Strips: See Floor Transition Details in the Finish Drawings.

C. Temporary Protective Coating: Product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products; and easily removable after grouting is completed without damaging grout or tile.

1. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as temporary protective coating for tile.

D. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

2.12 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

1. Verify that substrates for setting tile are firm; dry; clean, free of oil, waxy films, soap, silicones, and curing compounds; maximum variation in the plane or slope – 1/8-inch in 10-ft.
2. Verify that concrete substrates are ready for tile installation by testing for moisture emission rate and alkalinity; provide vapor reduction coating if test results are not within the following limits:

a. Moisture Emission Rate: Not greater than 5 lb. per 1000 sq. ft. per 24 hours, test in accordance with ASTM F1869 and ASTM F2170.

b. Alkalinity: Verify PH range of 5-9, test in accordance with ASTM F710.

3. Verify that concrete substrates for tile floors installed with bonded mortar bed or thin-set mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.

a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.

4. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
5. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thin-set mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer, which maintains tile installation systems warranty.

B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot (1:50) toward drains.

C. Blending: For tile exhibiting color variations, install to blend tile from 2 or 3 boxes.

D. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 TILE INSTALLATION

A. Comply with TCNA's "Handbook for Ceramic Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

1. For the following installations, follow procedures in the ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:

a. Tile floors in wet areas
b. Tile floors composed of tiles 8 by 8 inches or larger
c. Tile floors composed of rib-backed tiles

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

D. Provide manufacturers' standard trim shapes where necessary to eliminate exposed tile edges.

E. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.

1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.

F. Joint Widths: See Finish Materials Listing in the Finish Drawings.

G. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

H. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."
3. Furnish and install movement joints per TCNA Handbook – movement joints EJ171.
4. Contractor to coordinate location of control and isolation joints with Architect upon observation at site.

I. Thresholds: Install thresholds in same type of setting bed as adjacent floor unless otherwise indicated.

1. Do not extend cleavage membrane, waterproofing or crack isolation membrane under thresholds set in latex-Portland cement mortar. Fill joints between such thresholds and adjoining tile set on cleavage membrane, waterproofing or crack isolation membrane with elastomeric sealant.

J. Metal Edge Strips: Install at locations indicated.

K. Grout Sealer: Apply grout sealer to cementitious grout joints according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.4 WATERPROOF MEMBRANE INSTALLATION

A. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.

1. Locations: Install in the following wet areas:

a. Toilet Areas and Locker Rooms
b. Janitor Closets
c. Any tiled areas with floor drains

B. Provide full height waterproofing at all wall tile installations listed above.

C. Do not install tile or setting materials over waterproofing until waterproofing has cured and been flood tested for 24 hours to determine that it is watertight.

3.5 CRACK ISOLATION MEMBRANE INSTALLATION

A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness and bonded securely to substrate.

1. In areas of new construction or existing construction 5 years old or less specified to receive thin-set floor tile system, install membrane continuous over flooring substrate, from wall to wall.

B. Do not install tile or setting materials over crack isolation membrane until membrane has cured.

3.6 CLEANING AND PROTECTING

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove grout residue from tile as soon as possible.
2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
3. Remove temporary protective coating by method recommended by coating manufacturer and that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent drain clogging.

B. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.7 INTERIOR TILE INSTALLATION SCHEDULE

A. Interior Floor Installations, Concrete Subfloor:

1. Tile Installation F122 (Wet Floors): Thin-set mortar on waterproof membrane, TCA F122

   a. Thin-Set Mortar: Latex-Portland cement mortar. Provide medium-bed at all locations with 12” or larger tiles.
   b. Grout: Water-cleanable epoxy grout.

2. Tile Installation F125A (Dry Floors): Thin-set mortar on crack isolation membrane full coverage; TCA F125A

   a. Thin-Set Mortar (Dry Floors): Latex-Portland cement mortar. Provide medium-bed at all locations with 12” or larger tiles.
   b. Grout: Water cleanable epoxy grout.

B. Interior Wall Installations, Metal Studs or Furring:

1. Tile Installation W245 (Wet Walls): Thin-set mortar on coated glass-mat, water-resistant gypsum backer board; TCA W245.

   a. Thin-Set Mortar: Latex-Portland cement mortar
   b. Grout: Water-cleanable epoxy grout.

END OF SECTION 09 30 00

SECTION 09 51 23

ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Section Includes:

1. Drawings and general conditions of Contract, including General and Supplementary Conditions and Divisions-1 Specification sections apply to work of this section.

1.2 SUMMARY

A. Section Includes

1. Acoustical ceiling panels
2. Exposed grid suspension system
3. Wire hangers, fasteners, main runners, cross tees, and wall angle moldings
4. Perimeter Trim

B. Related Sections:

1. Section 09 51 33.13 Acoustical Snap In Metal Pan Ceiling
2. Section 09 20 00 - Plaster and Gypsum Board
3. Section 09 54 00 Specialty Ceilings
4. Divisions 23 - HVAC Air Distribution
5. Division 26 - Electrical

C. Alternates

1. Prior Approval: Unless otherwise provided for in the Contract documents, proposed product substitutions may be submitted no later than TEN (10) working days prior to the date established for receipt of bids. Acceptability of a proposed substitution is contingent upon the Architect's review of the proposal for acceptability and approved products will be set forth by the Addenda. If included in a Bid are substitute products that have not been approved by Addenda, the specified products shall be provided without additional compensation.
2. Submittals that do not provide adequate data for the product evaluation will not be considered. The proposed substitution must meet all requirements of this section, including but not necessarily limited to, the following: Single source materials suppliers (if specified in Section 1.5); Underwriters' Laboratories Classified Acoustical performance; Panel design, size, composition, color, and finish; Suspension system component profiles and sizes; Compliance with the referenced standards.

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
2. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
3. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
4. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
5. ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
6. ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
7. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
8. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials
9. ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems
10. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum
11. ASTM E 1264 Classification for Acoustical Ceiling Products

B. International Building Code

1. ASHRAE Standard 62 1 2004 Ventilation for Acceptable Indoor Air Quality
2. NFPA 70 National Electrical Code
3. ASCE 7 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures
4. ESR 1308 - Armstrong Suspension Systems

1.4 SYSTEM DESCRIPTION

A. Continuous/Wall-to-Wall

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each type of acoustical ceiling unit and suspension system required.

B. Samples: Minimum 6 inch x 6 inch samples of specified acoustical panel; 8 inch long samples of exposed wall molding and suspension system, including main runner and 4 foot cross tees.

C. Shop Drawings: Layout and details of acoustical ceilings show locations of items that are to be coordinated with or supported by the ceilings.

D. Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards. For acoustical performance, each carton of material must carry an approved independent laboratory classification of NRC, CAC, and AC.

E. If the material supplied by the acoustical subcontractor does not have an Underwriter's Laboratory classification of acoustical performance on every carton, subcontractor shall be required to send material from every production run appearing on the job to an independent or NVLAP approved laboratory for testing, at the architect's or owner's discretion. All products not conforming to manufacturer's current published values must be removed, disposed of and replaced with complying product at the expense of the Contractor performing the work.

1.6 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.

B. Fire Performance Characteristics: Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.

1. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 Classification.

C. Acoustic Panels: As with other architectural features located at the ceiling, may obstruct or skew the planned fire sprinkler water distribution pattern through possibly delay or accelerate the activation of the sprinkler or fire detection systems by channeling heat from a fire either toward or away from the device. Designers and installers are advised to consult a fire protection engineer, NFPA 13, or their local codes for guidance where automatic fire detection and suppression systems are present.

D. Coordination of Work: Coordinate acoustical ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

1.8 PROJECT CONDITIONS

A. Space Enclosure:

1. Standard Ceilings: Do not install interior ceilings until space is enclosed and weatherproof; wet work in place is completed and nominally dry; work above ceilings is complete; and ambient conditions of temperature and humidity are continuously maintained at values near those intended for final occupancy. Building areas to receive ceilings shall be free of construction dust and debris.

2. HumiGuard Plus Ceilings: Building areas to receive ceilings shall be free of construction dust and debris. Products with HumiGuard Plus performance and hot dipped galvanized steel, aluminum or stainless-steel suspension systems can be installed up to 120°F (49°C) and in spaces before the building is enclosed, where HVAC systems are cycled or not operating. Cannot be used in exterior applications where standing water is present or where moisture will come in direct contact with the ceiling.

3. HumiGuard Max Ceilings: Building areas to receive ceilings shall be free of construction dust and debris. Ceilings with HumiGuard Max performance can be installed in conditions up to 120°F (49°C) and maximum humidity exposure including outdoor applications, and other standing water applications, so long as they are installed with either SS Prelude Plus, AL Prelude Plus, or Prelude Plus Fire Guard XL suspension systems. Products with Humiguard Max performance can be installed in exterior applications, where standing water is present, or where moisture will come in direct contact with the ceiling. Only Ceramaguard with AL Prelude Plus suspension system can be installed over swimming pools.

1.9 WARRANTY

A. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period. Failures include, but are not limited to the following:

1. Acoustical Panels: Sagging and warping

2. Grid System: Rusting and manufacturer's defects

B. Warranty Period:

1. Acoustical Metal panels: One (1) year from date of substantial completion

2. Grid: Ten (10) years from date of substantial completion

C. The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

1.10 MAINTENANCE

A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.

1. Acoustical Metal Ceiling Units: Furnish quality of full-size units equal to 5.0 percent of amount installed.
2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Ceiling Panels:

1. Armstrong World Industries, Inc.
2. Approved Equal

B. Suspension Systems:

1. Armstrong World Industries, Inc.
2. Approved Equal

2.2 ACOUSTICAL CEILING UNITS

1. See Schedule for basis of design selections

2.3 METAL SUSPENSION SYSTEMS

A. Components:

1. Main beams and cross tees, base metal and end detail, fabricated from commercial quality hot dipped galvanized steel complying with ASTM A 653. Main beams and cross tees are double-web steel construction with type exposed flange design. Exposed surfaces chemically cleansed, capping prefinished galvanized steel in baked polyester paint. Main beams and cross tees shall have rotary stitching.
    a. Structural Classification: ASTM C 635 Intermediate Duty
    b. Color: White and match the actual color of the selected ceiling tile, unless noted otherwise.
    c. Recycle Content: Post-Consumer - 23% Pre-Consumer - 7%
    d. Acceptable Product: Square Lay-In 9/16” Exposed Tree Grid with shadow reveal molding (to be used with tegular wood and prelude)

B. Attachment Devices:

1. Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

C. Wire for Hangers and Ties:

1. ASTM A 641, Class 1 zinc coating, soft annealed, with a yield stress load of at least time three design load, but not less than 12 gauge.

D. Edge Moldings and Trim: Shadow Reveal Molding 7889

E. Accessories: XL Clips for the JLC T-Bars where applicable.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendations.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.

B. Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other sections.

1. Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination of other work.

3.3 INSTALLATION

A. Follow manufacturer installation instructions

B. Install suspension system and panels in accordance with the manufacturer's instructions, and in compliance with ASTM C 636 and with the authorities having jurisdiction.

C. Install wall moldings at intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps.

D. For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.

E. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.

F. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.

3.4 ADJUSTING AND CLEANING

A. Replace damaged and broken panels.

B. Clean exposed surfaces of ceilings panels, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 51 23

SECTION 096513 – RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Resilient base
2. Resilient molding accessories
3. Adhesive and related accessories

B. Related Sections:

1. Division 07 Section “Joint Sealants” for single-component and multi-component elastomeric, latex, silicone, urethane and other joint sealants.
2. Division 09 Section "Linoleum Flooring" for linoleum floor coverings.
3. Division 09 Section "Resilient Tile Flooring" for resilient floor tile.

1.3 ACTION SUBMITTALS

A. Submit items in accordance with Division 01 Section “Submittal Procedures.”

B. Product Data: For each type of product indicated, submit two (2) copies of manufacturers’ product data, installation instructions, and accessories specified and/or required by manufacturer.

C. Samples for Verification: Submit one (1) Sample for each type of product indicated in manufacturer's standard-size, of each resilient product color, texture, and pattern required.

D. Control Samples: Contractor to retain duplicate set of submitted Samples from the same production as the submitted Samples on site until the Project is completed.

E. Product Schedule: See Finish Material Listing in Finish Drawings.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials/attic stock that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Maintenance Materials: Contractor to coordinate with Owner the quantity of maintenance materials required for each product.

1.5 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

B. Mockups: Provide resilient products with mockups specified in other Sections.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1.7 PROJECT CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive resilient products during the following time periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 RESILIENT BASE

A. Resilient Base:

1. Manufacturers: Subject to compliance with requirements, see Finish Material Listing in Finish Drawings for Basis of Design.

B. Resilient Base Standard: ASTM F 1861

1. Material Requirement: Type TS (rubber, vulcanized thermoset)
2. Manufacturing Method: Group I (solid, homogeneous)

C. Style: See finish materials listing in the finish drawings.

D. Minimum Thickness: See Finish Material Listing in Finish Drawings.

E. Height: See Finish Material Listing in Finish Drawings.

F. Lengths: Coils in manufacturer's standard length

G. Outside Corners: Job formed

H. Inside Corners: Preformed

I. Finish Colors and Patterns: See Finish Material Listing in Finish Drawings.

2.2 RESILIENT MOLDING ACCESSORY

A. Resilient Molding Accessory:

1. Manufacturers: Subject to compliance with requirements, see Finish Material Listing in Finish Drawings for Basis of Design. Description: See Finish Material Listing and floor transition details in Finish Drawings.

B. Material: As standard with manufacturer.

C. Profile and Dimensions: See Finish Material Listing and floor transition details in Finish Drawings.

D. Colors and Patterns: See Finish Material Listing and floor transition details in Finish Drawings.

2.3 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), except that adhesive for rubber stair treads shall have a VOC content of 60 g/L or less.

C. Stair-Tread-Nose Filler: Two-part epoxy compound recommended by resilient tread manufacturer to fill nosing substrates that do not conform to tread contours.

D. Metal Edge Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edges of tiles, and in maximum available lengths to minimize running joints.

E. Floor Polish: Provide protective liquid floor polish products as recommended by resilient stair

tread manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates for Resilient Stair Treads and Accessories: Prepare according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer.
4. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after all substrates pass testing.

    a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate allowed by manufacturer(s) for each product specified in 24 hours.
    b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have maximum relative humidity level measurement allowed by manufacturer(s) for each product specified.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install resilient products until they are same temperature as the space where they are to be installed.

1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Preformed Inside Corners: Install preformed corners before installing straight pieces.

H. Job-Formed Outside Corners:

1. Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends.

3.4 RESILIENT ACCESSORY INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient accessories.

B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of all resilient floor covering that would otherwise be exposed per floor transition details.

3.5 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protection of resilient products.

B. Perform the following operations immediately after completing resilient product installation:

1. Remove adhesive and other blemishes from exposed surfaces.
2. Sweep and vacuum surfaces thoroughly.
3. Damp-mop surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Floor Polish: Remove soil, visible adhesive, and surface blemishes from resilient stair treads before applying liquid floor polish.

1. Apply liquid floor polish per manufacturers' recommendations.

E. Joint Sealant: Coordinate with floor finish material for requirements concerning applying sealant at door frames and other joints and penetrations.

F. Cover resilient products until Substantial Completion.

END OF SECTION

SECTION 09 67 10

RESINOUS FLOORING – EPOXY BODY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes one resinous flooring system, one with epoxy body.

1. Application Method: Metal, power or hand troweled.

2. Three component based monolithic epoxy flooring system 3/16" in thickness with aliphatic polyurethane topcoat.

3. Resinous epoxy flooring system with integral cove bases.

B. Related Requirements:

1. Section 017419 "Construction Waste Management" for administrative and procedural requirements for salvaging, recycling and disposing of nonhazardous construction waste.

2. Section 079200 "Joint Sealants" for sealants installed at joints in resinous flooring systems.

3. Section 033000 "Cast-in-Place Concrete" for concrete substrates to receive resinous flooring.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include manufacturer's technical data, application instructions, and recommendations for each resinous flooring component required.

B. Samples for Verification: For each resinous flooring system required, 5 inches (150 mm) square, applied to a rigid backing.

C. Product Schedule: Use resinous flooring designations indicated in Part 2 and room designations indicated on Drawings in product schedule.

D. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.

E. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.

F. Material Test Reports: For each resinous flooring component.

G. Maintenance Data: For resinous flooring to include in maintenance manuals.

H. Material Certificates: For each resinous flooring component, signed by manufacturer.

1.4 QUALITY ASSURANCE

A. No request for substitution shall be considered that would change the generic type of floor system specified (i.e. epoxy mortar based system with epoxy grout coat and polyurethane topcoat). Equivalent materials of other manufacturers may be substituted only on approval of Architect or Engineer. Request for substitution will only be considered only if submitted 10 days prior to bid date. Request will be subject to specification requirements described in this section.

B. Installer Qualifications: Engage an experienced installer (applicator) who is experienced in applying resinous flooring systems similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance, and who is acceptable to resinous flooring manufacturer.

1. Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.
2. Contractor shall have completed at least 10 projects of similar size and complexity.
3. Minimum of 5 years' experience in applying resinous flooring systems similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance, and who is acceptable to resinous flooring manufacturer.
4. Engage an installer who employs only persons trained and approved by resinous flooring manufacturer for applying resinous flooring systems indicated.

C. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, through one source from a single manufacturer, with not less than ten years of successful experience in manufacturing and installing principal materials described in this section. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.

D. Manufacturer Field Technical Service Representatives: Resinous flooring manufacturer shall retain the services of Field Technical Service Representatives who are trained specifically on installing the system to be used on the project.

1. Field Technical Services Representatives shall be employed by the system manufacturer to assist in the quality assurance and quality control process of the installation and shall be available to perform field problem solving issues with the installer.

E. Mockups: Apply mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Apply full-thickness mockups on 48-inch- (1200-mm-) square floor area selected by Architect.

    a. Include 48-inch (1200-mm) length of integral cove base.

2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

F. Pre-installation Conference:

1. General contractor shall arrange a meeting not less than thirty days prior to starting work.

2. Attendance:

    a. General Contractor

    b. Architect/Owner's Representative.

    c. Manufacturer/Installer's Representative.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.

B. Store materials to prevent deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects. Store materials in their original, undamaged packages and containers, inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures of excessive heat and freezing, and humidity. Material subjected to excessive heat or freezing shall be separated from inventory and destroyed by mixing all three components. The solid reacted product shall be disposed of in an environmentally sound and regulatory compliant manner.

C. All materials used shall be factory pre-weighed and pre-packaged in single, easy to manage batches to eliminate on site mixing errors. No on-site weighing or volumetric measurements allowed.

D. Shelf Life: 1 (one) year after date of manufacture, in unopened containers, under normal conditions.

E. Condition materials for use to 60°-85°F (15°-30°C) for 24 hours prior to application.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.

B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.

C. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application, unless manufacturer recommends a longer period.

D. Concrete substrate shall be properly cured. A vapor barrier must be present for concrete subfloors on or below grade. Otherwise, an osmotic pressure resistant grout must be installed prior to the resinous flooring

1.7 WARRANTY

A. Manufacturer shall furnish a single, written warranty covering both material and workmanship for a period of (1) full year from date of installation, or provide a joint and several warranty signed on a single document by material manufacturer and applicator jointly and severally warranting the materials and workmanship for a period of (1) full year from date of installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS FOR RESINOUS FLOORING SYSTEMS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include,

1. Build-up Broadcast or liquid-rich type systems will not be accepted and will result in a disqualification from bid.

2. Slip resistance index of minimum 0.6 for wet floor conditions.

3. VOC Content of Liquid-Applied Flooring Components: Not more than 100 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Acceptable Manufacturers:

1. Stonclad GS with Stonkote GS4 and Stonseal PA7 Basis of Design. Contact L. Chris Eicher (615) 424-2224 or ceicher@stonhard.com
2. Sika Corp.
3. BASF.
4. Dur-a-Flex.
5. Dudick

2.2 MATERIALS

A. Epoxy Resinous Flooring System: RES-#1 and RES-#2

1. System Description: Stonhard, Inc.; Stonclad GS® with Stonkote GS4® and Stonseal PA7®. A component based monolithic solid color flooring system installed at 3/16" — total system thickness with slip resistant texture, chemical resistance and high compressive strength, which accepts heavy abuse from impact and heavy loading. Resists high levels of water vapor emission from concrete substrate

B. System Characteristics:

1. Color and Pattern: As indicated in the Room Finish Schedule.

2. Wearing Surface: Stonclad Texture #2; 90# grit silica.

3. Finish: Gloss.

4. Integral Cove Base: 4”

5. Overall System Thickness: nominal 3/16”

C. System Components: Manufacturer's standard components that are compatible with each other and as follows:

1. Primer:

a. Material Basis: Stonhard Standard Primer
b. Resin: Epoxy
c. Formulation Description: (2) two component, 100 percent solids.
d. Application Method: Squeegee and roller.
e. Number of Coats: (1) one.

2. Mortar Base:

a. Material design basis: Stonclad GS
b. Resin: Epoxy.
c. Formulation Description: (3) three component, 100 percent solids.
d. Application Method: Metal Trowel.
   1) Thickness of Coats: nominal 3/16 inch (4.8 mm).
   2) Number of Coats: One.
e. Aggregates: Pigmented, graded aggregates.

3. Top Coat: Chemical resistant

a. Material design basis: Stonkote GS4
b. Resin: Bisphenol A epoxy coating.
c. Formulation description: 100% solids.
d. Type: pigmented.
e. Finish: Texture #2; 90# grit silica.
f. Number of Coats: One.

4. Seal Coat: Abrasion resistant
a. Material design basis: Stonseal PA7
b. Resin: aliphatic polyurethane

c. Formulation description: High solids
d. Type: Pigmented
e. Finish: Standard gloss
f. Number of coats: One.

D. System Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:

1. Compressive Strength: 10,000 psi after 7 days per ASTM C 579.
2. Tensile Strength: 1,750 psi per ASTM C 307.
3. Flexural Strength: 4,000 psi per ASTM C 580.
4. Water Absorption: < 1% per ASTM C 413.
5. Impact Resistance: > 160 in. lbs. per ASTM D 2794.
6. Flammability: Class 1 per ASTM E-648.
7. Hardness: .85 to .90, Shore D per ASTM D 2240.
8. Flexural Modulus of Elasticity: $2.0x10^6$ psi per ASTM C-580.
9. Abrasion Resistance: 0.01 gm max. weight loss per ASTM D-4060, CS-17.
10. Thermal Coefficient of Linear Expansion: 11 x10-^{6} in./in.˚F per ASTM C-413.

2.3 MISCELLANEOUS ACCESSORIES

A. Primer: Type recommended by manufacturer for substrate and body coats indicated. Formulation description: High-solids epoxy.

B. Patching and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.

C. Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated. Allowances should be included for Stonflex MP7 joint fill material. Silicone joint sealants not permitted.

PART 3 - EXECUTION

3.1 PREPARATION

A. General: Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, dry, and neutral pH substrate for resinous flooring application.

B. Chemical Surface Preparation:

1. Chemical surface preparation (acid etching) is unacceptable and will void Manufacturer's warranty.

C. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.

1. Roughen concrete substrates as follows:
   a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and re-circulates the shot by vacuum pickup.
   b. Comply with ASTM C 811 requirements, unless manufacturer's written instructions are more stringent.

2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written recommendations.

3. Verify that concrete substrates are dry.
   a. Perform in situ probe test, ASTM F 2170. Proceed with application only after substrates do not exceed a maximum potential equilibrium relative humidity of 85 percent.
   b. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with application only after substrates have maximum moisture-vapor-emission rate of 6 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) of slab in 24 hours.
   c. Perform plastic sheet test, ASTM D 4263. Proceed with application only after testing indicates absence of moisture in substrates.
   d. Perform additional moisture tests recommended by manufacturer. Proceed with application only after substrates pass testing.

4. Verify that concrete substrates have neutral pH and that resinous flooring will adhere to them. Perform tests recommended by manufacturer. Proceed with application only after substrates pass testing.

D. Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.

E. Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.

F. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written recommendations. Allowances should be included for Stonflex MP7 joint fill material, and CT5 concrete crack treatment

G. All areas not abutting a vertical surface shall be chased. This chase will be 1-1/2" wide and have a depth of 1/2". In addition, any substrate cracks will be routed and packed with material to prevent transfer of the crack through the overlayment.

H. Existing joints are honored by saw-cutting joints in the overlayment. The joints are then filled with Manufacturer's recommended sealant.

I. Do not proceed with resinous flooring installation until concrete substrates meet moisture and preparation requirements and any incurred damage to substrates has been repaired.

3.2 APPLICATION

A. General: Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.

1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum inter-coat adhesion.

2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.

3. At substrate expansion and isolation joints, provide joint in resinous flooring to comply with resinous flooring manufacturer's written recommendations.
   a. Apply joint sealant to comply with manufacturer's written recommendations.

B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.

C. Apply reinforcing membrane to substrate cracks.

D. Integral Cove Base: Apply cove base mix to wall surfaces and curbs where indicated before applying flooring. Install cove base according to manufacturer's written instructions and details including those for taping, mixing, priming, troweling, sanding, and top coating of cove base. Round internal and external corners.

1. Stonclad GS mortar, apply cove base mix to wall surfaces before applying flooring.

2. Integral Cove Base: 4 inches high.

E. Apply troweled body coat(s) in thickness indicated for flooring system. Hand or power trowel and grout to fill voids. When cured, sand to remove trowel marks and roughness.

F. Apply sealing or finish coat(s), including grout coat, if any, of type recommended by resinous flooring manufacturer to produce finish indicated. Apply in number of coats indicated for flooring system and at spreading rates recommended in writing by manufacturer.

3.3 TERMINATIONS

A. Chase edges to “lock” the flooring system into the concrete substrate along lines of termination.

B. Penetration Treatment: Lap and seal resinous system onto the perimeter of the penetrating item by bridging over compatible elastomer at the interface to compensate for possible movement.

C. Trenches: Continue flooring system into trenches to maintain monolithic protection. Treat cold joints to assure bridging of potential cracks.

D. Treat floor drains by chasing the flooring system to lock in place at point of termination.

3.4 JOINTS AND CRACKS

A. Treat control joints to bridge potential cracks and to maintain monolithic protection.

B. Treat cold joints and construction joints and to maintain monolithic protection on horizontal and vertical surfaces as well as horizontal and vertical interfaces.

C. Vertical and horizontal contraction and expansion joints are treated by installing backer rod and compatible sealant after coating installation is completed. Provide sealant type recommended by manufacturer for traffic conditions and chemical exposures to be encountered.

3.5 FIELD QUALITY CONTROL

A. Core Sampling: At the direction of Owner and at locations designated by Owner, take 1 core sample per 1000 sq. ft. (92.9 sq. m) of resinous flooring, or portion of, to verify thickness. For each sample that fails to comply with requirements, take two additional samples. Repair damage caused by coring, and correct deficiencies.

B. Material Sampling: Owner may at any time and any number of times during resinous Flooring application require material samples for testing forcompliance with requirements.

1. Owner will engage an independent testing agency to take samples of materials being used. Material samples will be taken, identified, sealed, and certified in presence of Contractor.

2. Testing agency will test samples for compliance with requirements, using applicable referenced testing procedures or, if not referenced, using testing procedures listed in manufacturer's product data.

3. If test results show applied materials do not comply with specified requirements, pay for testing, remove non-complying materials, prepare surfaces coated with unacceptable materials, and reapply flooring materials to comply with requirements.

3.6 CLEANING, PROTECTION AND CURING

A. Cure resinous flooring materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process. Close area of application for a minimum of 24 hours.

B. Protect applied flooring material during curing from traffic and chemical spillage per manufacturer's recommendations for temperature and cure time.

C. Protect resinous flooring from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous flooring manufacturer.

D. Clean resinous flooring not more than 4 days before dates scheduled for inspections intended to establish date of Substantial Completion in each Project area. Use cleaning materials and procedures recommended in writing by resinous flooring manufacturer.

SECTION 09 68 00

CARPET

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes modular carpet tile and accessories.

B. Related Requirements:

1. Section 024119 "Selective Demolition" for removing existing floor coverings.
2. [Section 096513 "Resilient Base and Accessories"] [Section 096519 "Resilient Tile Flooring"] for resilient wall base and accessories installed with carpet tile.

C. Description of scope and intent:

1. Contractor to provide all material, labor, and tools required to complete the installation of specified system.
2. Any omission of reference to items required to complete the full operational and functional system specified in the section does not relieve the contractor of the obligation to provide same.
3. To provide installation of all items, including delivery, dispersing to the proper locations within the building, and affixing in place.
4. Installation shall be accomplished by workers skilled in their craft who will perform their work in a professional manner and will leave the premises safe, orderly and clean.
5. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section
6. Contractor is responsible for coordination of work included in this specification with all other specification sections related to furnishing of all materials, labor, permits, fees and services necessary for completion of work in this section.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at [**Project site**].

1. Review methods and procedures related to carpet tile installation including, but not limited to, the following:
   a. Review delivery, storage, and handling procedures.
   b. Review ambient conditions and ventilation procedures.

c. Review subfloor preparation procedures.

1.4 ACTION SUBMITTAL

A. Product Data: For each type of product indicated. Include manufacturer's written technical data on physical characteristics, durability, and fade resistance for each carpet type. Include technical information on adhesives and installation recommendations for each type of substrate required.

B. Shop Drawings: For carpet tile installation, plans showing the following:

1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
2. Carpet tile type, color, and dye lot.
3. Type of subfloor.
4. Type of installation.
5. Pattern of installation.
6. Pattern type, location, and direction.
7. Pile direction.
8. Type, color, and location of insets and borders.
9. Type, color, and location of edge, transition, and other accessory strips.
10. Transition details to other flooring materials.

C. Samples for Verification: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

1. Carpet Tile: Full-size Sample.
2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch- long Samples.

D. Product Schedule: For carpet tile. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.

C. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: In maintenance manuals specified in Division 1. Include the following:

1. Methods for maintaining broadloom carpet and carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
2. Precautions for cleaning materials and methods that could be detrimental to carpet.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Carpet Tile: Full-size units equal to [**5**] percent of amount installed for each type indicated, but not less than 10 sq. yd..

1.8 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who is certified by the Floor Covering Installation Board or who can demonstrate compliance with its certification program requirements. The installation provider shall be directly responsible for the quality of the completed floorcovering installation, including the quality of both the materials and labor used in the installation. The installation provider shall directly warrant to the end use all products, materials and services related to the floorcovering installation (including any floorcovering(s), or other products or materials used in the installation) meeting specifications set forth herein. The installation provider shall have successful carpet installation experience on work similar to work of this Section.

B. Fire-Test-Response Characteristics: Provide products with the critical radiant flux classification indicated in Part 2, as determined by testing identical products per ASTM E 648 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

C. Product Options: Products and manufacturers named in Part 2 establish requirements for product quality in terms of appearance, construction, and performance. Other manufacturers' products comparable in quality and design to named products and complying with or exceeding requirements may be considered. Refer to Division 1 Section "Substitutions."
NOTE: Substitutions must meet or exceed the specifications for yarn, construction, etc. as well as varied colorways and patterned graphics where applicable.

D. Field sample: If requested and before installing carpet, install field sample for each type of carpet installation required to demonstrate aesthetic effects and qualities of materials and execution. Install field sample to comply with the following requirements, using materials indicated for the completed Work:

1. Install field samples in the location and of the size indicated or, if not indicated, as directed by Architect.
2. Notify Architect seven days in advance of dates and times when field samples will be installed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Approved field samples may become part of the completed Work if undamaged at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. General: Comply with CRI'S Carpet Installation Standard 104, "Storage and Handling."

1.10 FIELD CONDITIONS

A. General: Comply with CRI's Carpet Installation Standard 104, "Site Conditions; Temperature and Humidity."

B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.

1. Material shall be stored in an enclosed dry area protected from damage and soiling.
2. Store materials for (3) three days prior to installation in area of installation to achieve temperature stability.
3. Maintain minimum 70 degrees F. ambient temperature (3) three days prior to, during, and after installation.

C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

E. Carpeting shall be delivered to the job site in original mill wrapping with each roll having its register number properly attached, clearly marked as to size, dye lot and materials.

1.11 WARRANTY

A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.

1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
2. Failures include, but are not limited to, the following:
    a. More than 10 percent edge raveling, snags, and runs.
    b. Dimensional instability.
    c. Excess static discharge.
        1) Static generation shall be less than 3.0 kV at 70º F, and 20% R.H.
    d. Loss of tuft-bind strength.
    e. Loss of face fiber.
        1) Surface fiber wear shall not be more than 10% by weight in 15 years.
            (Note: Wear warranty shall not require use of chair pads)
    f. Delamination.
    g. Dimensional instability.

1) shrinkage, curling and doming which adversely affect the ability of the tile to lie flat

h. Mergeability

1) Carpet that is of the same style and colorway, but from different dye lots and/or manufacturing dates shall be mergeable and interchangeable, both at initial installation and at later selective replacement, to create a continuous carpeted surface with no tile appearing out of place.

C. Verify available warranties and warranty periods for carpet tiles.

1. Provide the following written warranties by carpet manufacturer for a period of not less than 15 years:

a. Submit manufacturer's National Voluntary Laboratory Accreditation Program (NVLAP) certified test results to show that carpet meets or exceeds product performance specification criteria for carpet testing requirements under Section 2.1 hereof.

b. Installation provider shall warrant all installation services will be free from defects in workmanship for a period of at least one (1) year following their completion, and that in the event of defective services, the installation provider will re-perform the effected services and, as necessary, supply new products of the same or similar grade sufficient to repair or replace products adversely affected.

1.12 EXTRA MATERIALS

A. Deliver extra materials to the Owner. Package with protective covering for storage and identify with labels describing contents.

PART 2 - PRODUCTS

2.1 CARPET TILE

A. Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, those indicated below.

1. Basis of Design: Interface Commercial Carpet; Collection: "Global Change";

a. Tufted Textured Loop Construction; 19.69" x 39.37" plank tile;

1) Tufted yarn weight: 15 oz. minimum;
2) Tufted pile height: 0.15" minimum;
3) Fiber: 100% Recycled Content Type 6 Aquafil Nylon; 100% Solution Dyed; Protekt Soil/Stain treatment;
4) Gage: 1/12
5) Stitches per inch: minimum 9.

b. Primary backing: Non-woven

c. Secondary Backing: Fiberglass Reinforced Thermoplastic Composite (polyolefin-free). Secondary backing shall be 100% recyclable at the end of its useful life and shall contain recycled content. Claims of 'recyclable' shall meet the Federal Trade

Commission Part 260; Traffic Class: Heavy; CRI Green label compliance; Product is 100% carpet to carpet recyclable; ADA compliant;

d. Color to be selected from manufacturers full product range. Substituted products that meet or exceed the specification must also resemble the graphic pattern and included same/ similar colorways of blue and greens along with all neutrals.

B. Performance Characteristics: As follows:

1. Flammability: Class I, ASTM E-648
2. Passed Methenamine Pill test; DOC-FF-1-70
3. Flooring Radiant Panel ASTM E648 (glue down) Class I
4. NBS Smoke Chamber ASTM E-662 - less than 450 flaming mode.
5. Emissions: Provide carpet tile that complies with testing and product requirements of CRI's "Green Label Plus" program #GLP0820.

2.2 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Leveling compound - Latex type as recommended by carpet manufacturer. Shall be compatible with carpet and curing/sealing compound on concrete.

B. Adhesives: Glue - Installation shall be free of the application of any wet adhesive.

1. Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.

C. Metal Edge/Transition Strips: Extruded aluminum with [mill] finish of profile and width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet performance.

B. Examine carpet and tiles for type, color, pattern and potential defects.

C. Verify that substrates and conditions are satisfactory for carpet installation and comply with requirements specified.

D. Concrete Slabs: Verify that finishes comply with ASTM F 710 and the following requirements specified in Section 033000 "Cast-in-Place Concrete".

1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by the Carpet manufacturer:
2. Sub floor finishes comply with requirements specified in Division 3 Section "Cast-in-Place Concrete" for slabs receiving carpet.
3. Sub floors are free of cracks, ridges, depressions, scale, and foreign deposits.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

F. Beginning of installation means installer accepts conditions of existing surfaces/ substrate.

3.2 PREPARATION

A. General: Comply with CRI's Carpet Installation Standard 104, "Site Conditions; Floor Preparation," and carpet manufacturer's written installation instructions for preparing substrates indicated to receive carpet installation.

B. Use trowelable, leveling and patching compounds, according to manufacturers written instructions, to fill cracks, holes, and depressions in substrates. Fill or level cracks, holes and depressions 1/8-inch-wide or wider, and protrusions more than 1/32 inch, unless more stringent requirements are required by manufacturer's written instructions.

C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.

D. Metal Substrates: Clean grease, oil, soil and rust, and prime if recommended in writing by adhesive manufacturer. Rough sand painted metal surfaces and remove loose paint. Sand aluminum surfaces, to remove metal oxides, immediately before applying adhesive.

E. Broom and vacuum clean substrates to be covered immediately before installing carpet. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust.

F. Proceed with installation only after unsatisfactory conditions have been corrected.

1.1 INSTALLATION

A. Comply with manufacturer's instructions and recommendations and in accordance with the Carpet and Rug Institute's Installation Standard.

1. Non-directional Installation: Each and every tile can be installed in any of the four possible directions without regard to pile direction, pattern or orientation of any adjacent tiles while still creating a finished carpet tile assembly that appears to be a visually continuous carpeted surface with no tile appearing out of place or improperly positioned.

2. Installation Method: As recommended in writing by carpet tile manufacturer for partial glue down. Install periodic tiles with releasable, pressure-sensitive adhesive.

3. Maintain dye lot integrity. Do not mix dye lots in same area.

B. "No-glue" waterless method of installation is preferred using materials described above.

1. In the event a releasable glue method of installation is required, the following adhesive description applies"
   a. Adhesive shall be water-based and allow for removal of carpet tile at any time without damage to carpet or substrate.
   b. Adhesive shall contain antimicrobial preservative and have "zero" calculated VOC's.

C. Comply with manufacturer's instructions for subfloor evaluation for moisture and alkalinity.

1. In the event the concrete subfloor does not meet moisture and alkalinity requirements as defined in manufacturer's installation instructions and the moisture vapor emission rates are less than 15 pounds and the alkalinity pH is less than 12.0, a moisture barrier such as MoistureGard 2.0 must be installed.
   a. Installation must comply with manufacturer's installation instructions.
   b. In the event the moisture vapor emission rate is higher than 15 pounds and the alkalinity is higher than a pH of 12.0, additional remediation of the slab is required.

D. Install carpet under open-bottom obstructions and under removable flanges and furnishings, and into alcoves and closets of each space.

E. Provide cut outs where required. Conceal cut edges with protective edge guards or overlapping flanges.

F. Run carpet under open bottom items such as heating convectors, and install tight against walls, columns and cabinets so the entire floor area is covered with carpet. Cover over all floor type door closures.

G. Install edging guard at all openings and doors wherever carpet terminates, unless indicated otherwise.

H. Cutting shall be done in accordance with the manufacturer's recommendation, using the tools designed for the carpet being installed.

I. Use leveling compound where necessary. Any floor filling or leveling shall have a minimum of 4'0" of feather.

J. Expansion joints - Do not bridge building expansion joints with continuous carpeting.

K. Chair Pads shall not be recommended or required within installation instructions.

G. Access Flooring: Stagger joints of carpet tiles so carpet tile grid is offset from access flooring panel grid. Do not fill seams of access flooring panels with carpet adhesive; keep seams free of adhesive.

1.2 CLEANING AND PROTECTION

A. Perform the following operations immediately after installing carpet:

1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet manufacturer.
2. Remove yarns that protrude from carpet surface.
3. Vacuum carpet using commercial machine with face-beater element.

B. Protect installed carpet to comply with CRI's Carpet Installation Standard 104, "Protection of Indoor Installations."

C. Protect carpet and carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet manufacturer.

1.3 SCHEDULE

A. Provide Carpet in all rooms indicated to receive carpet on the room finish plan.

B. Provide reducer strips for appropriate flooring transitions.

C. Reference "SUMBITTALS" of this specification section. All requested information shall be provided during the submittal phase as outline or the submittal will be returned as **"REVISE AND RESUBMIT".**

NOTE: All interior finish color selections to be chosen upon receipt of ALL complete interior finish submittals & shop drawings once they are reviewed and approved by MM. Upon the Owner's review and approval, a Color Schedule will be issued

END OF SECTION 09 68 00

SECTION 09 72 00

VINYL WALLCOVERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Vinyl and Non-Woven Backing Wallcovering.

B. Provide digitally printed wallcovering vinyl wallcovering, complete.
   1. Related Sections
      a. Section 165000 - Lighting: Permanent during installation.
      b. Section 092500 - Gypsum Board: Wall Substrates.
      c. Section 099000 - Painting: Preparation and priming of substrate surfaces.

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM):

1.	E 84	Test Method for Surface Burning Characteristics of Building Materials.

B. Wallcovering Association (WA):

1.	WA-101-2011	Quality Standard for Polymer Coated Fabric Wallcovering.

C. Federal Specifications (FedSpec):

1.	CCC-W- 408A	Wallcovering, Vinyl Coated

D. Underwriters Laboratory, Inc. (UL)

1.	UL 723	Test for Surface Burning Characteristics of Building Materials

E. National Fire Protection Agency (NFPA)

1.	NFPA 101	Life Safety Code
2.	NFPA 286	Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth

1.4 ALLOWANCES

A. See Section 012100 "Allowances" for description of allowances affecting items specified in this Section.

1.5 UNIT PRICES

A. See Section 012200 "Unit Prices" for description of unit prices affecting items specified in this Section.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include data on physical characteristics, durability, fade resistance, and fire-test-response characteristics.

B. Shop Drawings: Show location and extent of each wall-covering type. Indicate **pattern placement** seams and termination points.

a. Show complete pattern repeat.
b. Mark top and face of fabric.

C. Samples for Verification: For each type of wall covering and for each color, pattern, texture, and finish specified,

1. Wall-Covering Sample:
a. From same production run to be used for the Work, with specified **paint** applied.
b. Submit full-size samples, 54 inches wide by 36 inches long, cut from current production of each ground wallcovering selected to demonstrate quality, weight, color and embossing.

D. Product Schedule: For wall coverings. **Use same designations indicated on Drawings.**

1.7 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each wall covering, for tests performed by a qualified testing agency.

B. Submit manufacturer's written product certification that all furnished wallcovering ground meets or exceeds the specification requirements. Include certified copies of tests specified.

C. Submit manufacturers' product data and installation instructions for each digitally printed wallcovering mural, adhesive and accessory required.

1. Include data on physical properties, fire hazard classification and fire detection characteristics of wallcovering.
2. Include manufacturer's recommendations for maximum permissible moisture content of substrates.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance Data: For wall coverings to include in maintenance manuals.
   1. Submit wallcovering ground manufacturer's written instructions for recommended maintenance of each type of wallcovering required.

1.9 QUALITY ASSURANCE

A. Manufacturer: Provide each type of digitally printed vinyl wallcovering mural required produced by one manufacturer whose published product literature clearly indicates compliance of wallcovering ground with specified requirements.

B. Applicator: Installation by skilled commercial wallcovering applicators with no less than three years of documented experience installing wallcovering murals of the types and extent specified for the project.

C. Material Standards: Provide materials that meet or exceed Federal Specification CCC-W-408A and WA-101 Quality Standard for Polymer Coated Fabric Wallcovering for Type I and Type II wallcovering.

D. Physical Properties: Provide wallcovering with the following physical properties when tested in accordance with ASTM D751.

   1. Total weight: 21 oz./lin. yd
   2. Tensile Strength: 50 X 55 Minimum (W x F)
   3. Tear Strength: 25 X 25 Minimum (W x F)

E. Fire Hazard Classification: Provide materials that comply with Class A fire rating when tested in accordance with ASTM E84.

F. Underwriters Laboratories approval: Provide materials that have been tested and approved by Underwriters Laboratories.

G. Smoke Toxicity: Provide materials that have been tested for smoke toxicity and approved for use by New York City Materials and Equipment Acceptance Division (MEA).

H. Fire Detection Characteristics: Provide materials that have been laboratory tested for the Early Warning Effect® in accordance with ASTM E 603. Submit test results certifying that when one square foot section of the material is heated to 300 degrees F, the wallcovering emits an odorless, colorless non-toxic vapor that will activate an ionization smoke detector.

I. Low Emissions: Provide materials that meet the requirements of California Integrated Waste Management Board’s Special Environmental Requirements Specification CA 01350 for low emitting materials.

1.10 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver digitally printed vinyl wallcovering mural to the project site in unbroken and undamaged wrappings and clearly labeled with the manufacturer's identification label, quality or grade, UL label and sidemark.

B. Store materials in a clean, dry storage area with temperature maintained above 55 degrees with normal humidity.

C. Store material in a flat position to prevent damage to roll-ends. Do not cross stack material. Support material off the floor in a manner to prevent sagging and warping.

1.11 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install wall coverings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and HVAC system is operating and maintaining ambient temperature and humidity conditions at levels intended for occupants after Project completion during the remainder of the construction period.

B. Temperature and Humidity: Do not apply digitally printed wallcovering mural when surface and ambient temperatures are outside the temperature ranges required by the wallcovering manufacturer.

1. Apply adhesive only when substrate surface temperature or ambient temperature is above 60 degrees F, or relative humidity is below 40 percent.
2. Maintain constant recommended temperature and humidity for at least 72 hours prior to, throughout the installation period and for 72 hours after wallcovering installation completion.

C. Lighting: Do not install wall covering until lighting that matches conditions intended for occupants after Project completion is provided on the surfaces to receive wall covering.
1. Provide not less than an 80 foot candles per square foot lighting level minimum measured mid height at substrate surfaces.

D. Ventilation: Provide continuous ventilation during installation and for not less than the time recommended by wall-covering manufacturer for full drying or curing.

1. Provide continuous ventilation and heating facilities to maintain substrate surface and ambient temperatures above 60 degrees F unless required otherwise by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: As determined by testing identical wall coverings applied with identical adhesives to substrates in accordance with test method indicated below by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Surface-Burning Characteristics: Comply with ASTM E84-13a; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

a. Flame-Spread Index: **25** or less = **15**
b. Smoke-Developed Index: **50** or less = **5**
c. 0-25 Flame Spread Index = Class A / Type I

2. Fire-Growth Contribution: No flashover and heat and smoke release when tested in accordance with **NFPA 265**.

3. IBC 803.2 exempts materials less than 0.036-inch- (0.9-mm-) thick applied directly to wall or ceiling surfaces from fire testing.

B. Description: Provide wallpaper in rolls from same production run.

1. Compatibility with ASTM F793/F793M is preferred but not mandatory.
2. Category: **I, Decorative**.

C. Mildew Resistance: Rating of zero or 1 when tested in accordance with ASTM G21.

D. Standard Method of Test for Surface Burning Characteristics of Building Materials per ASTM E84-13a:

1. ASTM E84 Test Data:
a. Flame Spread Index 15
b. Smoke Developed Index 5

2. Classification: Class A
a. Fire retardancy: B-s1, d0 / Class A
3. Adhesive: Adhesive for non-woven wallcovering like Arte Clearpro or 100% dispersion adhesive
4. Light resistance: Good lightfastness
5. Care: Spongeable during hanging (dab away damp glue)
6. How to paste: Paste the wall
7. How to remove: Strippable
8. Remark: The pattern is repeatable, allowing several panoramiques to be joined together

2.2 CONTRACT VINYL – Kitchen Wallcovering <>

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation surfaces being true in plane and vertical and horizontal alignment, maximum moisture content, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Comply with manufacturer's written instructions for surface preparation.

B. Clean substrates of substances that could impair bond of wall covering, including dirt, oil, grease, mold, and mildew.

C. Prepare substrates to achieve a smooth, dry, clean, structurally sound surface free of flaking, unsound coatings, cracks, and defects.

1. Moisture Content: Maximum of 5 percent on new plaster, concrete, and concrete masonry units when tested with an electronic moisture meter.
2. Plaster: Allow plaster to cure for at least 90 days. Neutralize areas of high alkalinity. Apply primer/sealer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
3. Metals: If not factory primed, clean and apply metal primer as recommended in writing by metal-primer manufacturer and wall-covering manufacturer.
4. Gypsum Board: Apply primer/sealer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
5. Painted Surfaces:

    a. Check for pigment bleeding. Apply primer/sealer to areas susceptible to pigment bleeding as recommended in writing by primer/sealer manufacturer.
    b. Sand gloss, semigloss, and eggshell finishes with fine sandpaper.

D. Remove hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

E. Acclimatize wall-covering materials by removing them from packaging in the installation areas not less than 24 hours before installation.

3.3 INSTALLATION OF WALL COVERING

A. Comply with wall-covering manufacturers' written installation instructions applicable to products and applications indicated.

B. Cut wall-covering strips in roll number sequence. Change the roll numbers at partition breaks and corners.

C. Install strips in same order as cut from roll.

D. Install wall covering without lifted or curling edges and without visible shrinkage.

E. Match pattern above the finish floor.

F. Trim edges and seams for color uniformity, pattern match, and tight closure. Butt seams without overlaps or gaps between strips.

G. Fully bond wall covering to substrate. Remove air bubbles, wrinkles, blisters, and other defects.

3.4 CLEANING

A. Remove excess adhesive at seams, perimeter edges, and adjacent surfaces.

B. Use cleaning methods recommended in writing by wall-covering manufacturer.

C. Replace strips that cannot be cleaned.

D. Reinstall hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

END OF SECTION 09 72 00

SECTION 09 91 00

PAINTING

PART 1 - GENERAL

1.1 GENERAL

A. Exterior, interior, high-performance coatings, staining and transparent finishing.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.3 SUMMARY

A. Furnish labor, materials, tools and other equipment, and services necessary to provide the surface preparation and the application of paints, high performance coatings, stains and transparent finish systems, including all accessory items as required for a complete installation:

1. Interior and exterior, vertical and horizontal substrates:
   a. Concrete
   b. Wood Paneling
   c. Gypsum board (Interior and Exterior)

B. Work under this Section also includes moisture and alkalinity testing, and surface preparation of substrates as required for acceptance of finishes, including but not necessarily limited to, cleaning, small crack repair, patching, sanding, caulking, any other work required to provide smooth substrates, and specific pre-treatments such as sealing and priming of surfaces to the limits defined within the Master Painters Institute's (MPI) "Architectural Painting Manual" and/or "Maintenance Repainting Manual."

C. Related Requirements:

1. Division 01 Section "Temporary Facilities and Controls" for temporary/permanent climate requirements.
2. Division 03 Section "Cast-In-Place Concrete" for special finishes.
3. Division 04 Section "Unit Masonry" for paints and sealers over concrete or clay units.
4. Division 05 Sections for shop priming of metal substrates such as exposed structural steel, decking and miscellaneous metal which is not scheduled to have fire-resistive materials with primers and finish paints specified in this Section.
5. Division 06 Sections for shop priming carpentry with primers specified in this Section.
6. Division 07 Section "Traffic Coatings" for pedestrian traffic coatings, vehicular traffic coatings, equipment room floor coatings, and pavement-marking paints.

7. Division 08 Sections for factory priming wood windows and doors with primers specified in this Section.
8. Division 09 Section “Gypsum Board” for surface preparation of gypsum board.
9. Division 09 Painting Sections for special-use coatings.
10. Divisions 22, 23 and 26 for additional painting, color coding and stenciling requirements.
11. Division 32 for alkyd-resin and glass bead pavement-marking paints and decorative concrete staining.

1.4 REFERENCE STANDARDS

A. The following reference standard shall be used in conjunction along with additional more stringent information stated herein:

1. Master Painters Institute (MPI)
   a. MPI Architectural Painting Specification Manual

2. This specification shall be supplemented by any applicable federal, state and local building codes, guidelines, regulations, and standards adopted in the immediate geographic area of the Project; insurance rating organizations; including all other Authorities Having Jurisdiction.

1.5 ACTION SUBMITTALS

A. Submit items in accordance with Division 01 Section “Submittal Procedures.”

B. Product Data: For each type of product indicated, submit two (2) copies of manufacturers’ product data, installation instructions and accessories specified and /or required by manufacturer.

C. Samples for Verification:

1. For each type of paint and high-performance coating system and in each color and gloss of topcoat:
   a. Submit one (1) Sample on rigid backing, 8 inches square.
   b. Step coats on Samples to show each coat required for system.
   c. Label each coat of each Sample.
   d. Label each Sample for location and application area.

2. For each type of stain and transparent finish system and in each color and gloss of finish indicated.
   a. Submit one (1) Sample on representative samples of actual wood substrates, 8 inches square.
   b. Label each Sample for location and application area.

D. Control Samples: Contractor to retain duplicate set of Samples from the same production as the submitted Samples on site until the Project is completed.

E. Product List: For each product indicated, submit one (1) copy. Include the following:

1. Indicate each product and cross-reference to finish system color including locations of application areas. Use same designations indicated on Drawings and in schedules. Provide Final Product List and include Finish System Chart in closeout documents.
2. VOC content of each product specified.
3. Include product list in closeout Submittals.

1.6 MISCELLANEOUS MATERIALS

A. Furnish extra materials from the same product run that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint, high-performance coatings, stains and transparent finishes: 1 gal. of each material, color and finish applied.

B. Oils, turpentine, and other materials required to accomplish this work shall be first quality materials.

C. Thinners shall be of a type as recommended by the paint manufacturer for each product specified.

D. Turpentine shall comply with requirements of Federal Specification TT-T-801.

E. Mineral Spirits shall comply with requirements of Federal Specification TT-T-291 Grade 1.

1.7 QUALITY ASSURANCE

A. Applicator Qualifications: A company or individual, qualified and approved by Manufacturer/Supplier, with a minimum of five years of continuous, uninterrupted experience in successfully applying work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance, and who agrees to employ only skilled tradesmen with a minimum of three years' experience.

B. Mockups: Apply mockups of each finish system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions including lighting for application of each finish system specified in Part 3.
   a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft.
   b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.
   a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

C. Pre-Installation Conference: Conduct conference at Project site prior to commencement of field installation with Contractor, Subcontractor, Architect/Designer and others, as required.

1. Review requirements for substrates and for preparation by other trades.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers with original labels in well- ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F nor greater than 90 deg F and/or more restrictive requirements as per manufacturer.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

B. Conform to requirements of local Authorities Having Jurisdiction in regard to the handling, mixing, application and disposal of all paint materials, related waste materials, and/or hazardous materials.

1.9 FIELD CONDITIONS

A. Apply paints, high performance coatings, stains and transparent finishes only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F and/or more restrictive requirements as per manufacturer.

B. Do not apply paints, high-performance coatings, stains and transparent finishes when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp, wet and/or unprepared surfaces. Coordinate any more restrictive requirements with manufacturer.

C. Only apply paints when atmosphere is relatively free of airborne dust and contaminates.

D. When dry abrasive blasting carbon steel surfaces, the dew point temperature in the space must be maintained at least 17 deg F. lower than the temperature of the surface being prepared or greater as per manufacturers' recommendations.

E. During paint and coating application, the dew point temperature in the space must be maintained at least 10 deg F. lower than the temperature of the surface being painted along with additional more stringent parameters set forth by paint and coating manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Unless otherwise noted, materials shall be products of the Sherwin-Williams Co., as listed in Section 3.06, Painting Schedule. These establish performance requirements and a standard of quality, unless otherwise specified. PPG & Benjamin Moore Co. are accepted as equals. Equivalent products, when submitted according to Division 01 Section “Product Requirements” will be considered.

2.2 PAINT, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
3. Provide products of same manufacturer from each coat in a finishing system and prepare paints as per manufacturer’s recommendations.

B. VOC Content: Products shall comply with VOC limits of Authorities Having Jurisdiction

C. Colors: See the Finish Materials Listing in the Finish Drawings.

2.3 SOURCE QUALITY CONTROL

A. Testing of Finish Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage the services of a qualified testing agency to sample paint, high-performance coatings and wood finishing materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying paints, high-performance coatings and wood finishing if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and refinish surfaces finished with rejected materials. Contractor will be required to remove rejected materials from previously finished surfaces if, on refinishing with complying materials, the two finishes are incompatible or produce results that, in the opinion of the Architect, are aesthetically unacceptable.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows (or less as per manufacturer):

1. Concrete: 12 percent
2. Masonry (Clay and CMU): 12 percent
3. Wood: 15 percent
4. Portland Cement Plaster: 12 percent
5. Gypsum Board: 12 percent
6. Plaster: 12 percent

C. Interior and Exterior Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

D. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

E. Verify gypsum board finish level prior to application of paints and high-performance coatings. Coordinate with Gypsum Board Specification.

F. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates and finish systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be finished. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing finish operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

C. Clean substrates of substances that could impair bond of paints, high-performance coatings, stains and transparent finishes including dust, dirt, oil, grease, and incompatible paints and encapsulants.
1. Remove incompatible primers and re-prime substrate with compatible primers or apply tie coat as required to produce finish systems indicated.

D. Concrete Substrates: Allow concrete to cure for 28 days. Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

1. Concrete Floors: Prepare concrete floors by abrasive blast cleaning and/or mechanically profiling in accordance with manufacturer's recommendations. Acid etching may be used if specifically recommended by manufacturer.
2. High Performance Coatings:
    a. Clean surfaces with pressurized water. Use pressure range in accordance with MPI Manual.
    b. Abrasive blast clean surfaces to comply with SSPC-SP 7/NACE No. 4, "Brush-Off Blast Cleaning."

E. Masonry Substrates: Allow masonry to cure for 28 days. Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.

1. High-Performance Coatings:
    a. Clean surfaces with pressurized water. Use pressure range in accordance with MPI Manual.

F. Wood Substrates:

1. Wood substrates to be finished with paint or high-performance coatings.
    a. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for use in paint system indicated.
    b. Sand surfaces that will be exposed to view and dust off.
    c. Prime edges, ends, faces, undersides, and backsides of wood.
    d. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

2. Wood substrates to be stained:
    a. Exterior Wood Substrates:
        1) Scrape and clean knots and apply coat of knot sealer before applying primer.
        2) Prime edges, ends, faces, undersides, and backsides of wood.
    b. For varnish coated stained wood, stain edges and ends and prime with varnish. Prime undersides and backsides with varnish.
        1) Countersink steel nails, if used, and fill with putty or plastic wood filler tinted to final color. Sand smooth when dried.
    c. Interior Wood Substrates:
        1) Scrape and clean knots and apply coat of knot sealer before applying primer.
        2) Apply wood filler paste to open-grain woods, as defined in "MPI Architectural Painting Specification Manual," to produce smooth, glasslike finish.
        3) Sand surfaces that will be exposed to view and dust off.
        4) After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

G. Mold and/or Mildew: Notify Owner and Architect of all locations where mold/mildew is discovered prior to proceeding with application of any finish systems. Removal of substrate material will be required at all gypsum product locations and at other areas as per Owner/Architect's direction.

3.3 APPLICATION

A. Apply paints, high-performance coatings, stains and transparent finishes according to manufacturer's written instructions and recommendations in "MPIManual."

1. Use applicators and techniques suited for finish system and substrate indicated.
2. Finish surfaces behind movable items same as similar exposed surfaces. Before final installation, finish surfaces behind permanently fixed items with prime coat only.
3. Finish both sides and edges of doors and entire exposed surface of door frames.
4. Finish front and back sides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
5. Prime glazing stops and glazing beads before glass is installed.
6. Finish entire exposed surface of window frames and sashes.
7. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
8. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply finishes to produce surface films without cloudiness, spotting, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Apply a minimum of four coats of paint or high-performance coating to surfaces specified to receive deep or bright colors.

F. Back-prime exterior and interior woodwork which is to receive paint finish, with exterior primer.

G. Remove grilles, covers, and access panels and paint separately.

H. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following Work where exposed in equipmentrooms or as directed by Architect:
   a. Uninsulated metal piping
   b. Uninsulated plastic piping
   c. Pipe hangers and supports
   d. Metal conduit
   e. Plastic conduit
   f. Tanks that do not have factory-applied final finishes
   g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or another paintable jacket material.
   h. Equipment, stands, supports, intake bonnets, flutes and all factory-primed items to receive final paint that are exposed to view in equipment rooms, on the roof or outside the building.

2. Paint the following Work where exposed in occupiedspaces or as directed by Architect:
   a. Uninsulated metal piping
   b. Uninsulated plastic piping
   c. Pipe hangers and supports
   d. Metal conduit
   e. Plastic conduit
   f. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or another paintable jacket material.
   g. Equipment, stands, supports, intake bonnets, flutes and all factory-primed items to receive final paint that are exposed to view in equipment rooms, on the roof or outside the building. outside the building.
3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces with primer and one coat of “black” (non-reflecting) paint recommended by manufacturer.
4. Paint disconnect switches for fire alarm system and exit light systems in ‘red’ enamel, unless factory finished in specified color.
5. Keep all sprinkler heads and escutcheons free of paint.
6. Backprime and paint face and edges of fire-retardant plywood service panels for telephone and electrical equipment before installation, to match adjacent wall surface. Leave equipment in original finish except for touch up as required, and paint conduits, mounting accessories and other unfinished items.
7. Any code required fire-retardant wood/plywood used for electrical and/or telephone equipment shall retain one grade/label stamp free frompaint.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test finishes for dry film thickness.

1. Contractor shall touch up and restore finished surfaces damaged by testing.
2. If test results show that dry film thickness of applied finish does not comply with manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing finish application, clean spattered surfaces. Remove spattered finishes by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from finish application. At completion of construction activities, correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

END OF SECTION 09 91 00

SECTION 10 14 23

PANEL SIGNAGE

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Room-identification signs.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For panel signs.

1. Include fabrication and installation details and attachments to other work.
2. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
3. Show message list, typestyles, graphic elements, including raised characters and Braille, and layout for each sign at least half size.

C. Samples for Verification: For each type of sign assembly showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:

1. Room-Identification Signs: Full-size Sample.

D. Sign Schedule: Use same designations specified or indicated on Drawings or in a sign schedule.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.5 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

    a. Deterioration of finishes beyond normal weathering.
    b. Deterioration of embedded graphic image.
    c. Separation or delamination of sheet materials and components.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PANEL SIGNS, GENERAL

A. All signage shall conform with the overall design criteria for the project:

1. Confirm with design team prior to making any orders for any changes.

2.2 PERFORMANCE REQUIREMENTS

A. Accessibility Standard: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities for signs.

2.3 SIGNS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated by the following:

1. 2/90 Sign Systems – to be confirmed.

B. Room-Identification Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:

1. Structural rails shall be 6063-T5 extruded aluminum in accordance with ASTM B 221 and ASTM B 209. The rail shall be the internal horizontal member spaced to allow uniform, modular sizing of inserts, anodized black. The rail shall be capable of accepting plastic or aluminum copy inserts. Rail shall allow for different mounting devices, including wall mounting for screw-on applications and pressure sensitive tape. Rail joiners shall be extruded in black PVC plastic. Rail joiners shall connect structural rails together providing a butt joint along their edges. Rail joiners shall not be visible in rail assembly.
2. Solid copy inserts shall be 0.090 inch extruded ABS plastic core with 0.003 inch acrylic cap bonded during the extrusion/ texturing process.
3. Braille dots shall conform to standard dimensions for Grade 2 Braille.

    a. Dot diameter: 0.059 inch
    b. Dot height: 0.025 inch
    c. Inter-dot spacing: 0.090 inch

d. Horizontal separation between cells: 0.241 inch
e. Vertical separation between cells: 0.395 inch.

4. End caps shall be 6063-T5 extruded aluminum, with square corners. End caps shall interlock to structural rail with steel spring clips to form an integral unit, enclosing and securing the changeable copy inserts, without requiring tools for assembly. End caps shall be interchangeable to either end of sign and to other signs in the system of equal height.
5. Top/bottom trim shall be extruded in 6063-T5 aluminum, anodized black, to provide decorative trim cap, which butts flush to adjacent copy insert and encloses top or bottom of structural rail and copy insert.
6. Mounting: Surface mounted to wall with two-face tape.
7. Text and Typeface: Accessible raised characters and Braille, Arial.

2.4 ACCESSORIES

A. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch thick, with adhesive on both sides.

2.5 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
2. Form work to required shapes and sizes, with true curves, lines and angles. Provide necessary rebates, lugs and brackets for assembly of units.
3. Contact surfaces of connected members shall be true. Assemble so joints will be tight and practically unnoticeable, without use of filling compound.
4. Signs shall have fine, even texture and be flat and sound. Lines and miters shall be sharp, arises unbroken, profiles accurate and ornament true to pattern. Plane surfaces shall be smooth, flat and without oil-canning, free of rack and twist. Maximum variation from plane of surface shall be plus or minus 0.032 inch. Restore texture to filled or cut areas.
5. Extruded members shall be free from extrusion marks. Square turns and corners shall be sharp, curves true.
6. Exposed ends and edges shall be mill smooth, with corners slightly rounded.
7. All painted surfaces shall be properly primed. Finish coating of paint shall have complete coverage with no light or thin applications allowing substrate or primer to show. Parts shall be checked for approval against the color match master chip. Finished surface shall be smooth, free of scratches, gouges, drips, bubbles, thickness variations, foreign matter and other imperfections.

2.6 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable,

temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Directional Finishes: Run grain with long dimension of each piece and perpendicular to long dimension of finished trim or border surface unless otherwise indicated.

2.7 ALUMINUM FINISHES

A. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of signage work.

B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.

1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
2. Install signs so they do not protrude or obstruct according to the accessibility standard.
3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.

B. Room-Identification Signs and Other Accessible Signage: Install in locations on walls as indicated.

C. Mounting Methods:

1. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support

weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position and push to engage tape adhesive.

3.3 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 10 14 23

SECTION 10 21 13.19a

PLASTIC TOILET COMPARTMENTS - PUBLIC BATHROOMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plastic toilet compartment partitions for following applications:
   a. Toilet enclosures.
   b. Urinal screens.

B. Related Requirements:

1. Division 03 Section "Cast in Place Concrete" for compartment anchorage to concrete substrates.

2. Division 04 Section "Unit Masonry" for compartment anchorage to masonry substrates.

3. Division 05 Section "Metal Fabrications" for miscellaneous structural and support metal components required to secure compartments.

4. Division 06 Section "Rough Carpentry" for compartment anchorage to frame walls.

1.2 REFERENCES

A. ASTM International (ASTM):

1. ASTM A 240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.

2. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

3. ASTM A 743/A 743M - Standard Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application.

4. ASTM B 86 - Standard Specification for Zinc and Zinc-Aluminum (ZA) Alloy Foundry and Die Castings.

5. ASTM B 221 - Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

6. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

B. International Code Council (ICC)/American National Standards Institute (ANSI):

1. ICC/ANSI A117.1 - Accessible and Usable Buildings and Facilities, as applicable to toilet compartments designated as accessible.

C. United States Department of Justice:

1. ADA - Americans with Disabilities Act, Excerpt from 28 CFR Part 36 - ADA Standards for Accessible Design.

D. GREENGUARD Environmental Institute (GREENGUARD):

1. GREENGUARD certified low emitting products.

1.3 ACTION SUBMITTALS

A. Product Data: Manufacturer's data sheets for each type of product indicated. Include fabrication details, description of materials and finishes.

1. Product Test Reports: When requested by Architect, submit documentation by qualified independent testing agency indicating compliance of products with requirements.

B. Shop Drawings: Include overall product dimensions, floor plan, elevations, sections, details, and attachments to other work. Include choice of options with details.

C. Samples for Selection: Furnish samples of manufacturer's full range of colors for initial selection.

D. Samples for Verification: Furnish physical sample of material in selected color.

1. Size: 2 by 2 inch (52 by 52 mm) minimum, in type of finish specified.

E. LEED Submittals: NA

1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include breakout costs for each product with recycled content.

1.4 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance and cleaning instructions.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Approved manufacturer listed in this section, with minimum 5 years' experience in the manufacture of toilet compartments.

B. Manufacturer Qualifications: Approved manufacturer listed in this section, with minimum 5 years' experience in the manufacture of toilet compartments. Manufacturers seeking approval

must submit the following in accordance with Instructions to Bidders and Division 01 requirements:

1. Product data, including test data from qualified independent testing agency indicating compliance with requirements.

2. Samples of each component of product specified.

3. List of successful installations of similar products available for evaluation by Architect.

C. Installers Qualifications: Experienced Installer regularly engaged in installation of toilet compartments for minimum 3 years.

D. Source Limitations: Obtain toilet compartment components and accessories from single manufacturer.

E. Accessibility Requirements: Comply with requirements of ICC/ANSI 117.1, and with requirements of authorities having jurisdiction.

F. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Class C standard combustion requirements

2. Flame-Spread Index: Not greater than 75.

3. Smoke-Developed Index: 450.

G. Indoor Environmental Quality Certification: Provide certificate indicated that products have been certified under the following programs, or a comparable certification acceptable to Owner:

1. GREENGUARD Indoor Air Quality Certified.

2. GREENGUARD Certified for Children and Schools.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver toilet compartments to site until building is enclosed and HVAC systems are in operation.

1. Deliver toilet compartments in manufacturer's original packaging.

2. Store in an upright condition.

1.8 WARRANTY

A. Special Manufacturer’s Warranty: Provide manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship during the following period after substantial completion:

1. Plastic Toilet Partitions: Against corrosion, breakage, and delamination: 15 years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Manufacturer for Public Bathrooms: Subject to compliance with requirements, provide products of **Bradley Corporation, The Mills Company, Menomonee Falls, WI 53051**.

1. Contact Information:
Phone: (800)272-3539;
Email: info@BradleyCorp.com;

2.2 MATERIALS

A. Plastic Panels: High density polyethylene (HDPE) suitable for exposed applications, waterproof, non-absorbent, and graffiti-resistant textured surface, Class C.

1. Provide panels with minimum 30 percent pre-consumer recycled content.

B. Zinc Aluminum Magnesium and Copper Alloy (Zamac): ASTM B 86.

C. Stainless Steel Sheet: ASTM A 240 or A 666, 300 series.

D. Stainless Steel Castings: ASTM A 743/A 743M.

E. Aluminum: ASTM B 221.

2.3 PLASTIC TOILET COMPARTMENTS

A. Toilet Compartment Type:

1. Floor Mounted Overhead Braced.
   a. Basis of Design Product: Bradley, Mills Partitions, Sentinel Bradmar, Series 400.
   b. Integral Hinge System
   c. Aluminum Surface Mounted Slide Latch & Keeper (Std) (Does Not Have Emergency Access)
   d. Aluminum Continuous Brackets
   e. Multiple configurations:
   f. Corner Right and Left
   g. Between Wall-ADA
   h. Alcove with Stalls
   i. Shop Drawings Required; Refer to Drawing Schedule for Color

B. Urinal Screen Style:

1. Wall hung with brackets:
   a. Basis of Design Product: Bradley, Mills Partitions, Sentinel Bradmar, Series 400.
   b. Aluminum Continuous Brackets

C. Door, Panel, and Pilaster Construction, General: HDPE, with a 3/16" (4.8mm) radiused edge.

1. Provide exposed surfaces free of pitting, visible seams and fabrication marks, stains, or other imperfections.
2. Provide aluminum heat sink at bottom edge of panels and doors.
3. Provide no-sightline system.

D. Door Construction: 1 inch (25 mm) thick.

E. Panel Construction: 1 inch (25 mm) thick.

F. Pilaster Construction: 1 inch (25 mm) thick.

G. Headrail: Extruded anodized aluminum headrail with anti-grip profile. Clamps around pilaster and is secured to the wall with stainless steel brackets.

H. Shoes: 4 inches (76 mm) high minimum, 300 series stainless steel with No. 4 satin brushed finish.

I. Urinal-Screen Construction: Matching toilet compartment panel construction

J. Urinal-Screen Post: Manufacturer's standard post design of material matching the thickness and construction of pilasters.

K. Brackets (Fittings):

1. Full-Height (Continuous) Type: Manufacturer's standard design; stainless steel.

L. Plastic Panel Finish: Manufacturer's standard impregnated finish, with one color in each room.

1. Color: As selected by Architect from manufacturer's full range.

2.4 HARDWARE

A. Hardware, Heavy Duty: Manufacturer's heavy-duty stainless steel, including stainless steel tamper-resistant fasteners:

1. Hinges: Self-closing **[**integral, nylon, gravity-type**]** **OR** **[**continuous spring-loaded type**]** adjustable to hold doors open at any angle up to 90 degrees, with emergency access by lifting door.
2. Latch and Keeper: Surface-mounted slide latch with flat rubber-faced combination door strike and keeper, with provision for emergency access, meeting requirements for accessibility at accessible compartments.
3. Coat Hook: Combination hook and rubber-tipped stop, sized to prevent door from hitting compartment-mounted accessories. Provide wall bumper where door abuts wall. Provide formed L-shaped hook without stop at outswing doors. Mount with stainless steel through-bolts.
4. Door Pull: Standard unit on outside of inswing doors. Provide pulls on both sides of outswing doors.

2.5 FABRICATION

A. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine work area to verify that measurements, substrates, supports, and environmental conditions are in accordance with manufacturer's requirements to allow installation.

1. Proceed with installation once conditions meet manufacturer's requirements.

3.2 INSTALLATION

A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.

B. Install toilet partitions and screens in spaces with operating air ventilated systems. Shield partitions and screens from direct sunlight and exposure to humidity.

C. Clearances: Install with clearances indicated on Drawings. Where clearances are not indicated, allow maximum 1/2 inch (13 mm) between pilasters and panels, and 1 inch (25 mm) between panels and walls.

3.3 ADJUSTING

A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 15 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

3.4 FINAL CLEANING

A. Remove packaging and construction debris and legally dispose of off-site.

B. Clean partition and screen surfaces with materials and cleansers in accordance with manufacturer's recommendations.

END OF SECTION 10 21 13.19a

SECTION 10 28 00

TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Public-use washroom accessories.
2. Custodial accessories.

B. Related Sections:
1. Section 088300 "Mirrors" for frameless mirrors.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include the following:
1. Construction details and dimensions.
2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
3. Material and finish descriptions.
4. Features that will be included for Project.
5. Manufacturer's warranty.

1.3 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations: For products listed together in the same Part 2 articles, obtain products from single source from manufacturer.

1.6 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, 0.031-inch minimum nominal thickness unless otherwise indicated.

B. Brass: ASTM B 19, flat products; ASTM B 16/B 16M, rods, shapes, forgings, and flat products with finished edges; or ASTM B 30, castings.

C. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold -rolled, commercial steel), 0.036-inch minimum nominal thickness.

D. Galvanized-Steel Sheet: ASTM A 653/A 653M, with G60 hot-dip zinc coating.

E. Galvanized-Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.

F. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.

G. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).

2.2 PUBLIC-USE WASHROOM ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Bradley Corporation.
2. A & J Washroom Accessories, Inc.
3. Bobrick Washroom Equipment, Inc.
4. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.

B. Toilet Tissue (Roll) Dispenser: **As indicated on Drawings**

C. Combination Towel (Folded) Dispenser/Waste Receptacle: **As indicated on Drawings**

D. Liquid-Soap Dispenser: **As indicated on Drawings**

E. Grab Bar:
1. Basis-of-Design Product: Bobrick B-5806.
2. Mounting: Flanges with concealed fasteners.
3. Material: Stainless steel, 0.05 inch thick.
4. Finish: Smooth, No. 4 finish (satin) on ends and slip-resistant texture in grip area.
5. Outside Diameter: 1-1/4 inches.
6. Configuration and Length: As indicated on Drawings.

F. Sanitary-Napkin Disposal Unit: **As indicated on Drawings**

G. Seat-Cover Dispenser: **As indicated on Drawings**

H. Door Hook(s): **As indicated on Drawings**

2.3 CUSTODIAL ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Bradley Corporation.

2. A & J Washroom Accessories, Inc.
3. Bobrick Washroom Equipment, Inc.
4. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.

B. Mop and Broom Holder: **(Provide in Janitorial (1 Total) – As indicated on Drawings.**
1. Basis-of-Design Product: Bradley Corporation.
2. Description: Unit with shelf, hooks, holders, and rod suspended beneath shelf.
3. Length: 36 inches.
4. Hooks: Three.
5. Mop/Broom Holders: Four, spring-loaded, rubber hat, cam type.
6. Material and Finish: Stainless steel, No. 4 finish (satin).
7. Shelf: Not less than nominal 0.05-inch- thick stainless steel.
8. Rod: Approximately 1/4-inch- diameter stainless steel.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units' level, plumb, and firmly anchored in locations and at heights indicated.

B. Install accessories in compliance with the 2010 ADA Standards for Accessible Design and depicted in the drawings.

END OF SECTION 10 28 00

SECTION 10 44 13

FIRE PROTECTION CABINETS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fire-protection cabinets for the following:

a. Portable fire extinguishers.

B. Related Requirements:

1. Section 104416 "Fire Extinguishers."

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing recessed-, semi recessed-, or surface-mounting method and relationships of box and trim to surrounding construction.

B. Shop Drawings: For fire-protection cabinets. Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each type of exposed finish required.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.4 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers, indicated are accommodated.

B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

PART 2 - PRODUCTS

2.1 FIRE-PROTECTION CABINET

A. Cabinet Type: Suitable for fire extinguisher.

1. Manufacturers and products:>: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. JL Industries, Inc.; a division of the Activar Construction Products Group.
b. Larsens Manufacturing Company.
c. Potter Roemer LLC.

B. Cabinet Construction: Nonrated.

C. Cabinet Material: Cold-rolled steel sheet.

D. Recessed Cabinet:

1. Exposed Flat Trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).

E. Semi recessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).

1. Rolled-Edge Trim: 2-1/2-inch backbend depth.

F. Cabinet Trim Material: Steel sheet.

G. Door Material: Steel sheet.

H. Door Style: Vertical duo panel with frame.

I. Door Glazing: Tempered float glass (clear).

J. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

1. Provide projecting door pull and friction latch.
2. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.

K. Accessories:

1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.

L. Materials:

1. Cold-Rolled Steel: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.

   a. Finish: Baked enamel or powder coat.
   b. Color: White.

2. Tempered Float Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

2.2 FABRICATION

A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.

1. Weld joints and grind smooth.
2. Provide factory-drilled mounting holes.

B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.

1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
2. Miter and weld perimeter door frames.

C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.3 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.

C. Finish fire-protection cabinets after assembly.

D. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and partitions for suitable framing depth and blocking where semirecessed cabinets will be installed.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare recesses for semi recessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

A. General: Install fire-protection cabinets in locations and at mounting heights indicated or, if not indicated, at heights indicated below:

B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.

1. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is inadequate for recessed cabinets, provide semi recessed fire-protection cabinets.

3.4 ADJUSTING AND CLEANING

A. Remove temporary protective coverings and strippable films, if any, as fire-protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.

B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.

C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.

D. Touch up marred finishes or replace fire-protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet and mounting bracket manufacturers.

E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 10 44 13

SECTION 10 44 16

FIRE EXTINGUISHERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes portable, hand-carried fire extinguishers.

B. Related Requirements:

1. Section 104413 "Fire Protection Cabinets."

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher.

1.3 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.

1.4 COORDINATION

A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Failure of hydrostatic test according to NFPA 10.
   b. Faulty operation of valves or release levers.

2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, “Portable Fire Extinguishers.”

B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

A. Fire Extinguishers:

1. Manufacturers and products:> Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Amerex Corporation.
   b. Ansul Incorporated.
   c. JL Industries, Inc.; a division of the Activar Construction Products Group.
   d. Kidde Residential and Commercial Division; Subsidiary of Kidde plc.
   e. Larsens Manufacturing Company.
   f. Potter Roemer LLC

B. Multipurpose Dry-Chemical Type in Steel Container: UL-rated 4-A:60-B:C, 10-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

2.3 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or black baked-enamel finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fire extinguishers for proper charging and tagging.

1. Remove and replace damaged, defective, or undercharged fire extinguishers.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.

B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION 10 44 16

SECTION 107516 - GROUND-SET FLAGPOLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes ground-set flagpoles made from **aluminum**.

B. Owner-Furnished Material: Flags.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, operating characteristics, fittings, accessories, and finishes for flagpoles.

B. Shop Drawings: For flagpoles.

1. Include plans, elevations, and attachment details. Show general arrangement, jointing, fittings, accessories, grounding, anchoring, and support.
2. Include section, and details of foundation system.

C. Samples for Verification: For each type of exposed finish, in manufacturer's standard sizes.

D. Delegated-Design Submittal: For flagpoles.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For flagpoles to include in operation and maintenance manuals.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Spiral wrap flagpoles with heavy paper and enclose in a hard fiber tube or other protective container.

2.1 MANUFACTURERS

A. Source Limitations: Obtain flagpoles as complete units, including fittings, accessories, bases, and anchorage devices, from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design flagpole assemblies.

B. Seismic Performance: Flagpole assemblies shall withstand the effects of earthquake motions determined according to **ASCE/SEI 7**.

C. Structural Performance: Flagpole assemblies, including anchorages and supports, shall withstand design loads indicated within limits and under conditions indicated.

1. Wind Loads: Determine according to NAAMM FP 1001. Basic wind speed for Project location is **SEE STRUCTURAL DRAWINGS**. **MUST BE A HURRICANE RATED FLAGPOLE.**
2. Base flagpole design on **polyester** & **nylon or cotton** flags of maximum standard size suitable for use with flagpole or flag size indicated, whichever is more stringent.

2.3 ALUMINUM FLAGPOLES

A. Aluminum Flagpoles: **Cone**-tapered flagpoles fabricated from seamless extruded tubing complying with ASTM B 241/B 241M & ASTM B 221 Alloy 6063, with a minimum wall thickness of 3/16 inch (4.8 mm).

B. Exposed Height: **25 feet (7.5 m) (See drawings for quantities)**

C. Construct flagpoles in one piece if possible. If more than one piece is necessary, comply with the following:

1. Fabricate shop and field joints without using fasteners, screw collars, or lead calking.
2. Provide flush hairline joints using self-aligning, snug-fitting, internal sleeves.

D. Metal Foundation Tube: Manufacturer's standard corrugated-steel foundation tube, 0.060-inch (1.52-mm) wall thickness with 3/16-inch (4.8-mm) steel bottom plate and support plate; 3/4-inch- (19-mm-) diameter, steel ground spike; and steel centering wedges welded together. Galvanize foundation tube after assembly. Furnish loose hardwood wedges at top of foundation tube for plumbing pole.

1. Flashing Collar: Same material and finish as flagpole.

E. Cast-Metal Shoe Base: Made from aluminum **with same finish and color as flagpoles** for anchor-bolt mounting; furnish with anchor bolts.

1. Furnish ground spike.

F. Hinged Baseplate: Cast-metal tilting hinged base and anchor plate joined by permanently secured pivot rod. Furnish with stainless-steel screws for securing tilting base to anchor plate when not tilted; furnish with anchor bolts.

1. Finish: Same as flagpole.
2. Furnish aluminum base or aluminum flashing collar finished to match flagpole.
3. Furnish ground spike.

G. Pivoting Tilt Base: Steel baseplate with channel or rectangular tube uprights, pivot bolt, and locking device for tilting flagpole. Furnish tilting flagpole with steel counterweight box and weights, or furnish with internal counterweight. Furnish base with anchor bolts.

1. Finish: Same as flagpole.
2. Furnish ground spike.

2.4 FITTINGS

A. Finial Ball: Flush-seam ball, sized as indicated or, if not indicated, to match flagpole-butt diameter.

1. 0.063-inch (1.6-mm) spun aluminum**, with gold anodic finish**].

B. External Halyard: Ball-bearing, non-fouling, revolving truck assembly of cast metal with continuous **5/16-inch- (8-mm-) diameter, braided polypropylene halyard** and 9-inch (228-mm) cast-metal cleats with fasteners. Finish exposed metal surfaces to match flagpole.

1. Halyards and Cleats: **One** at each flagpole.
2. Cleat Covers: Cast metal, finished to match flagpole, secured with cylinder locks.
3. Halyard Covers: 2-inch (50-mm) channel, 60 inches (1500 mm) long, finished to match flagpole.
4. Halyard Flag Snaps: **Stainless-steel** swivel snap hooks **with neoprene covers**. Furnish two per halyard. Product in "Plastic Halyard Flag Clips" Subparagraph below is a patented alternative to halyard flag snaps in "Halyard Flag Snaps" Subparagraph above.

2.5 MISCELLANEOUS MATERIALS

A. Non-shrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M.

B. Drainage Material: Crushed stone, or crushed or uncrushed gravel; coarse aggregate.

C. Sand: ASTM C 33/C 33M, fine aggregate.

D. Elastomeric Joint Sealant: **Single-component nonsag urethane** joint sealant complying with requirements in Section 079200 "Joint Sealants."

E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

2.6 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, **AA-M12C22A41**

PART 3 - EXECUTION

3.1 PREPARATION

A. Prepare uncoated metal flagpoles that are set in foundation tubes by painting below-grade portions with a heavy coat of bituminous paint.

B. Foundation Excavation: Excavate to neat clean lines in undisturbed soil. Remove loose soil and foreign matter from excavation and moisten earth before placing concrete. Place and compact drainage material at excavation bottom.

C. Provide forms where required due to unstable soil conditions and for perimeter of flagpole base at grade. Secure and brace forms to prevent displacement during concreting.

D. Foundation Tube: Place foundation tube, center, and brace to prevent displacement during concreting. Place concrete. Plumb and level foundation tube and allow concrete to cure.

E. Sleeves: Locate and secure sleeves in forms by bracing to reinforcement and forms.

F. Anchor Bolts: Locate and secure anchor bolts in forms with templates and by tying to reinforcement.

G. Place concrete, as specified in **Section 033000 "Cast-in-Place Concrete."** Compact concrete in place by using vibrators. Moist-cure exposed concrete for no fewer than seven days or use nonstaining curing compound.

H. Trowel exposed concrete surfaces to a smooth, dense finish, free of trowel marks, and uniform in texture and appearance. Provide positive slope for water runoff to perimeter of concrete base.

3.2 FLAGPOLE INSTALLATION

A. General: Install flagpoles where indicated and according to **Shop Drawings and** manufacturer's written instructions.

B. Foundation Tube: Place flagpole in tube, seated on bottom plate between steel centering wedges, and install hardwood wedges to secure flagpole in place. Place and compact sand in foundation tube and remove hardwood wedges. Seal top of foundation tube with a 2-inch (50-mm) layer of elastomeric joint sealant and cover with flashing collar.

C. Baseplate: Cast anchor bolts in concrete foundation. Install baseplate on washers placed over leveling nuts on anchor bolts and adjust until flagpole is plumb. After flagpole is plumb, tighten retaining nuts and fill space under baseplate solidly with non-shrink, nonmetallic grout. Finish exposed grout surfaces smooth and slope 45 degrees away from edges of baseplate.

END OF SECTION 107516

SECTION 122413

ROLLER WINDOW SHADES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Manually operated roller shade system

B. Related Requirements:

1. Division 06 Section "Rough Carpentry" or "Miscellaneous Rough Carpentry" for wood blocking and grounds for mounting roller shades and accessories.
2. Division 07 Section "Joint Sealants" for sealing the perimeters of installation accessories for light-blocking shades with a sealant.
3. Division 08 Section "Aluminum Windows."
4. Division 08 Section "Glazed Aluminum Curtainwalls."
5. Division 09 Section "Gypsum Wallboard Systems" coordination with gypsum wallboard systems for installation of shade pockets, closures and related accessories.
6. Division 09 Section "Acoustical Ceilings" coordination with acoustical ceiling systems for installation shade pockets, closures and related accessories.

C. This Specification shall be supplemented by any more stringent applicable federal, state, and local building codes, guidelines, regulations, and standards adopted in the immediate geographic area of the Project; insurance rating organization; including all other Authorities Having Jurisdiction.

1.3 ACTION SUBMITTALS

A. Submit items in accordance with Division 01 Section "Submittal Procedures."

B. Product Data: For each type of product.

1. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, operating instructions, installation instructions and accessories specified and/or required by manufacturer.

C. Shop Drawings: Plans, elevations and sections showing fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations.

D. Samples for Verification: For each type of roller shade.

1. Shadeband Material: Submit two (2) Samples not less than 10 inches square. Mark inside face of material if applicable.
2. Roller Shade: Full-size operating unit, not less than 16 inches wide by 36 inches long for each type of roller shade indicated.
3. Installation Accessories: Full-size unit, not less than 10 inches long.

E. Roller-Shade Schedule: Use same designations indicated on Drawings. Include opening sizes and key to typical mounting details.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: Methods for maintaining roller shades, cleaning instructions and instructions for operating hardware and controls.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Roller Shades: Full-size units equal to 5 percent of quantity installed for each size, color, and shadeband material indicated, but no fewer than two units.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Verify Installer is qualified and approved by Manufacturer/Supplier, with a minimum of ten years of continuous, uninterrupted experience in successfully installing work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance, and who agrees to employ only skilled tradesmen with a minimum of five years experience.

B. Product Certificates: For each type of shadeband material, signed by product manufacturer.

C. Product Test Reports: For each type of shadeband material, for tests performed by a qualified testing agency.

1. Fire-Test-Response Characteristics: Passes NFPA 701-99 small and large scale vertical born.
2. Electrical Components: Listed and labeled by UL, ETL or other testing agency acceptable to Authorities Having Jurisdiction, marked for intended use, and tested as a system.
3. Anti-Microbial Characteristics: 'No Growth' per ASTM G21

D. Source Limitations: Obtain roller shades from single source from single manufacturer.

E. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

F. Preinstallation Conference: Conduct conference at Project site prior to commencement of Shop Drawings with Contractor, Subcontractor, Architect/Designer and others, as required.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver roller shades in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.9 WARRANTY

A. Rollershade Hardware, (Chain and Shadecloth): Non-depreciating twenty-five year limited warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide MechoShade Systems, Inc., 42-03 35th Street, Long Island City, NY 11101 or comparable product by one of

the following:

1. Draper Inc.
2. Lutron Electronics Co., Inc.

2.2 MANUALLY OPERATED SHADES WITH DOUBLE ROLLERS

A. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated.

1. Bead Chains: Stainless steel rated to 90 lbs. minimum breaking strength.

a. Loop Length: Full length of roller shade.
b. Limit Stops: Provide upper and lower ball stops.
c. Chain-Retainer Type: Clip, jamb mount.

2. Spring Lift-Assist Mechanisms: Manufacturer's standard for balancing roller-shade weight and lifting heavy roller shades.

a. Provide for shadebands that weigh more than 10 lbs. or for shades as recommended by manufacturer, whichever criteria are more stringent.

B. Spring Operating Mechanisms: Roller contains spring sized to accommodate shade size indicated. Provide with positive locking mechanism that can stop shade movement at each half-turn of roller and with manufacturer's standard pull.

1. Pole: Manufacturer's standard type in length required to make operation convenient from floor level and with hook for engaging pull.

C. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive- end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.

1. Double-Roller Mounting Configuration:

a. Offset, outside roller over and inside roller under.

2. Inside Roller:

a. Drive-End Location: Right side of inside face of shade.
b. Direction of Shadeband Roll: Regular, from back of roller.

3. Outside Roller:

a. Drive-End Location: Right side of inside face of shade.
b. Direction of Shadeband Roll: Regular, from back of roller.

4. Shadeband-to-Roller Attachment: Removable spline fitting integral channel in tube.

D. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller mounting configuration, roller assemblies, operating mechanisms, installation accessories, and installation locations and conditions indicated.

1. Shade hardware to support 150 percent of the full weight of each shade.

E. Roller-Coupling Assemblies: Coordinated with operating mechanism and designed to join up to three inline rollers into a multiband shade that is operated by one roller drive- end assembly.

F. Inside Shadebands:

1. Shadeband Material: Light-filtering fabric
2. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.

a. Type: Enclosed in sealed pocket of shadeband material

G. Outside Shadebands:

1. Shadeband Material: Light-blocking fabric
2. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.

a. Type:

1) Exposed with endcaps and integral light seal where bottom (sill) channels are indicated.

H. Installation Accessories:

1. Front Fascia: Aluminum extrusion that conceals front and underside of roller and operating mechanism and attaches to roller endcaps without exposed fasteners.

a. Shape: L-shaped
b. Height: Manufacturer's standard height required to conceal roller and shadeband when shade is fully open.
c. Color: Clear Anodized

2. Endcap Covers: To cover exposed endcaps.
3. Installation Accessories Color and Finish: Match front fascia.

2.3 MANUALLY OPERATED SHADES WITH SINGLE ROLLERS

A. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated.

1. Bead Chains: Stainless steel rated to 90 lbs. minimum breaking strength.

a. Loop Length: Full length of roller shade

b. Limit Stops: Provide upper and lower ball stops.
c. Chain-Retainer Type: Clip, jamb mount

2. Spring Lift-Assist Mechanisms: Manufacturer's standard for balancing roller-shade weight and lifting heavy roller shades.

a. Provide for shadebands that weigh more than 10 lbs. or for shades as recommended by manufacturer, whichever criteria are more stringent.

B. Spring Operating Mechanisms: Roller contains spring sized to accommodate shade size indicated. Provide with positive locking mechanism that can stop shade movement at each half-turn of roller and with manufacturer's standard pull.

1. Pole: Manufacturer's standard type in length required to make operation convenient from floor level and with hook for engaging pull.

C. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive- end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.

1. Roller Drive-End Location: Right side of inside face of shade.
2. Direction of Shadeband Roll: Regular, from back of roller.
3. Shadeband-to-Roller Attachment: Removable spline fitting integral channel in tube.

D. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.

1. Shade hardware to support 150 percent of the full weight of each shade.

E. Roller-Coupling Assemblies: Coordinated with operating mechanism and designed to join up to three inline rollers into a multiband shade that is operated by one roller drive- end assembly.

F. Shadebands:

1. Shadeband Material: Light-filtering fabric
2. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.

a. Type:

1) Enclosed in sealed pocket of shadeband material.

G. Installation Accessories:

1. Front Fascia: Aluminum extrusion that conceals front and underside of roller and operating mechanism and attaches to roller endcaps without exposed fasteners.

a. Shape: L-shaped
b. Height: Manufacturer's standard height required to conceal roller and shadeband when shade is fully open.
c. Color: Clear Anodized

2. Endcap Covers: To cover exposed endcaps.
3. Installation Accessories Color and Finish: Match front fascia.

2.4 SHADEBAND MATERIALS

A. Shadeband Material Flame-Resistance Rating: Comply with NFPA 701. Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

B. Light-Filtering Fabric: Woven fabric, stain and fade resistant.

1. Visually Transparent Single-Fabric Shadecloth: ThermoVeil Group, single thickness non-raveling 0.030-inch thick vinyl fabric, woven from 0.018-inch diameter extruded vinyl yarn.

a. Dense Vertical Weave: "1000 Series" - approximate 2-3% openness factor

C. Light-Blocking Fabric: Opaque fabric; stain and fade resistant.

1. Vinyl Room Darkening Single-Fabric Shadecloth: "0700 Series" – classic blackout, 0.012-inch thick blackout material, 14 oz. per square yard, 62 threads per square inch.

2.5 ROLLER-SHADE FABRICATION

A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.

B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F:

1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which shade is installed less 1/4 inch per side or 1/2-inch total, plus or minus 1/8 inch. Length equal to head-to-sill or -floor dimension of opening in which shade is installed less 1/4 inch, plus or minus 1/8 inch.

C. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible except as follows:

1. Vertical Shades: Where width-to-length ratio of shadeband is equal to or greater than 1:4, provide battens and seams at uniform spacings along shadeband length to ensure shadeband tracking and alignment through its full range of movement without distortion of the material.

2. Railroaded Materials: Railroad material where material roll width is less than the required width of shadeband and where indicated. Provide battens and seams as required by railroaded material to produce shadebands with full roll-width panel(s) plus, if required, one partial roll-width panel located at top of shadeband.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, accurate locations of connections to building electrical system, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ROLLER-SHADE INSTALLATION

A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.

1. Opaque Shadebands: Located so shadeband is not closer than 2 inches to interior face of glass. Allow clearances for window operation hardware.

3.3 ADJUSTING

A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean roller-shade surfaces after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer that ensure that roller shades are without damage or deterioration at time of Substantial Completion.

C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain motor-operated roller shades.

END OF SECTION

SECTION 15010 - GENERAL MECHANICAL REQUIREMENTS

1.1 EXTENT OF SECTION:

This section specifies the basic requirements for mechanical (HVAC, Plumbing and Fire Protection) installations and includes requirements common to more than one section of Division 15. It expands and supplements the requirements specified in sections of Division 1.

1.2 ACCESSIBILITY:

Install equipment and materials to provide required access for servicing and maintenance minimum of 3 feet clearance. Coordinate the final location of concealed equipment and devices requiring access with final location of required access panels and doors. Allow ample space for removal of all parts that require replacement or servicing. Extend all grease fittings to an accessible location.

1.3 CONTRACTORS QUALIFICATIONS

General: Wherever the word "sub-contractor" or "firm" is used in these sub-paragraphs, it shall mean the contractor/sub-contractor of record for the installations used for proficiency qualification.

Location: The firm which performs the installation of the work under this section shall be one who maintains an established, experienced organization with a permanent, staffed office.

Plumbing Experience: The firm's proficiency in the installation and adjustment of plumbing systems shall have been demonstrated by the successful performance of work as specified herein on at least three commercial or institutional buildings, each containing a minimum of 10 plumbing fixtures. The firm shall have been in business performing services as specified herein, for at least 3 years.

HVAC Experience: The firm's proficiency in the installation, start-up, adjustment, and maintenance of air conditioning systems shall have been demonstrated by the successful performance of work as specified herein on at least three systems each with ducted air distribution, and hydronic and refrigerant piping of 100 tons capacity or greater. The firm shall have Certified Mechanical Contractor licensed personnel, instruments, tools, and equipment to perform the installation, balancing, and maintenance service specified. The firm shall have been in business performing services as specified herein, for at least 3 years.

Test and Balance: The firm's proficiency in the test and balance of the air conditioning systems shall have been demonstrated by the successful performance of work as specified herein on at least three systems each with ducted air distribution, and refrigerant piping of 100 tons capacity or greater, incremental units excluded. The firm shall have trained personnel, instruments, tools, and equipment to perform the testing and balancing service specified. The firm shall have been in business performing services as specified herein, for at least 3 years and be independent of the mechanical contractor and shall be an active member of AABC or NEBB.

1.4 REQUIREMENTS

Requirements specified herein are minimum. All equipment, when installed, shall perform equal to, or exceed specified requirements.

1.5 ARCHITECTURAL AND/OR STRUCTURAL REQUIREMENTS

Refer to the specifications and Architectural drawings for additional requirements pertaining to work under this discipline. Notify Architect/Engineer if conflicts exist for clarification.

1.6 DEFINITIONS

Manufacturers' Representatives: Wherever MANUFACTURERS REPRESENTATIVE is referred to in this division of these specifications, said representative shall be regularly employed by the manufacturer to perform similar activities to those called for herein, which indicates his competence in that field of work.

Concealed: Where the word concealed is used in this division, it shall mean items above ceilings, in attics, in crawl spaces, in chases, in tunnels, in cabinet work, and under counters or equipment not visible from an elevation of 5 feet at a horizontal distance of 10 feet.

Finished Spaces or Areas: Where finished spaces or areas are referred to in this division, it shall mean all spaces except concealed spaces or mechanical rooms unless otherwise noted.

Extended Warranties: Where extended warranties beyond contractor's one (1) year warranty are specified, the additional warranty time shall start at the end of the contractor's one (1) year warranty.

Provide: Furnish and install.

Control & Interlock Wiring: All wiring, both line voltage and low voltage, other than power wiring from electrical distribution panel, through the primary control device, to the item of equipment.

Primary Control Device: That ONE device for any item of equipment which interrupts power flow during normal operation. Where magnetic starters are provided, they are the primary control. For items not switched by starters, the primary control device will be that ONE thermostat, time clock, manual switch, aquastat, P.E. switch, or relay performing the primary switching.

Code or Standard Reference: Where reference is made to a Code or ASTM Standard without a date indicated, the date shall be the latest date or edition as of the date of the opening of bids.

Diagrammatic: A drawing that shows arrangement and relationship (as of parts), i.e.: A diagrammatic drawing uses symbols rather than pictorial representation of pipes, ducts, conduit, and other items shown and are not necessarily to scale. Arrangement, location, and sizes shown are firm.

Readily Accessible: Where items are specified to be readily accessible, they shall be available for maintenance or use in space, above a lay-in ceiling or through an access door from floor elevation, or by standing on an 8-foot ladder.

Noted, Indicated or Shown: Where the terms "Noted", "Indicated", or "Shown" are used in these specifications, the words "in the specifications or on the plans" shall be inferred.

Detail: Where reference is made to a Detail, the Detail shall be on the plans unless otherwise noted.

Specifications: Where reference is made to these specifications, it shall be inferred in this section of specifications.

Notification by Contractor, and Instructions to Contractor: Where reference is made in these specifications to notification by the Contractor or instructions given to the Contractor, it shall be inferred that the Architect/Engineer shall be the instructor or shall be notified, as the case exists.

Division or Section Reference: Where reference is made to another division or section within this division, refer to specifications table of contents for division, section, or page number.
Flow Diagram: A single-line, two-dimension, non-sealed drawing depicting arrangement and sequence of equipment, valves, controls, thermometers, gauges, and other specialty devices in a pipe or duct system.

1.7 CLEARANCE ABOVE ELECTRICAL SWITCHGEAR AND ELECTRICAL PANELS

Clearance above electrical switchgear and electrical panels shall be maintained by mechanical system so that no mechanical ducts, pipes, vents, or equipment is routed above or across the space directly above this equipment in conformance with N.E.C.

1.8 CODES AND ORDINANCES

General: Where requirements of these specifications exceed specified codes and ordinances, conform to these specifications. Materials and equipment included in Underwriters Label Service shall bear that label. Electrical equipment shall be U.L. approved as installed.

Permits: Obtain all permits, paying all fees in connection therewith. At completion, have work inspected by proper authorities and furnish the Architect for the Owner an inspection certificate showing approval of installation.

Plumbing: Conform to the International Plumbing Code.

Energy: Conform to the International Energy Code for Buildings.

Mechanical: Conform to the Mechanical Code.

NFPA: All applicable NFPA codes not to be limited to NFPA 101, NFPA 90A, NFPA 90B.

1.9 HOLLOW SPACES OR PLENUMS

HVAC systems shall be fully ducted, however if some spaces become classified as a hollow space used as ducts or plenums then, all materials of systems installation exposed in hollow spaces used as ducts or plenums shall have a flame spread rating of 25 or less and a smoke development rating of 50 or less.

1.10 SHOP DRAWINGS

General: Contractor shall check data to ensure compliance with specifications prior to submitting. Submittal shall be assembled in complete sets in hard back three-ring binders, by trade, and bound with numbered index sheets and tabs. Submittal data shall be submitted at one time unless unavailable drawings would delay job progress. Data shall include capacities, complete installation instructions, dimensional data and electrical data, BHP, motor HP, operating weights, and load distribution at mounting points.

Identification: All submittal data shall be identified by a cover sheet showing project name, specification sections, drawing or detail number, room number, date, revision date, contractor and subcontractor's organization and project manager with phone number, the model, style and size of item being submitted with manufacturer's representative, salesman (or preparer who can answer questions), and phone number. Manufacturer's standard drawings shall be modified by deletions or additions to show only items applicable to this project.

Review: The Contractor agrees that submittals of equipment and material and shop drawings of equipment and material layouts required under provisions of these specifications and processed by the Architect/Engineer are not Change Orders. The purpose of submittals is to demonstrate that the Contractor understands the design concept of the project by indicating the equipment and materials he intends to furnish and install, and by detailing the installation he intends to achieve.

The Contractor shall conform to the requirements of the Contract Documents unless a change order is issued. The Contractor shall identify on each submittal and in letterform to the Architect/Engineer any and all deviations from the contract documents.

Any submittal or shop drawings not conforming to the Contract Documents without this identification and notification shall be assumed to be marked "Revise and Resubmit" (Contractor acknowledges this by the submission), and the Contractor shall promptly re-submit said submittal to be in full compliance with the Contract Documents.

Failure of the Contractor to provide this information during the shop drawings phase shall make the Contractor responsible for all changes to achieve compliance with the Contract Documents without additional compensation.

Items to be Submitted:
Tabulation of Power Wiring Requirements: Within 20 Days of Notice to Proceed, provide a Tabulation

of Power Wiring Requirements of all proposed equipment, including H.P., amps, voltage, phase, and KW, tabulated on a separate sheet. A copy of the tabulation shall be transmitted independently to the general contractor, Architect/Engineer, and to all affected trades. (Refer to Electrical Drawings for electrical provisions for equipment.)

Plumbing System Components:

Submit all components required for complete installation of Plumbing system designed and specified herein and as required by the engineer of record.

HVAC System Components:

Submit all components required for complete installation of HVAC system designed and specified herein and as required by the engineer of record.

1.11 TRADE NAMES

When reference is made in the Contract Documents to trade names, brand names, or to the names of manufacturers, such references are made solely to indicate that products of that description may be furnished and are not intended to restrict competitive bidding. If it is desired to use products of trade or brand names or of manufacturer's names which are different from those mentioned in the Contract Documents, application for the approval of the use of such products must reach the hands of the Architect/Engineer at least ten days prior to the date set for the opening of bids. The latter provision is a restriction, which applies only to the party making a submittal. Therefore, the previously mentioned restriction does not inhibit the Architect/Engineer from adding trade names, brand names or names of manufacturers by addendum. The burden of proving acceptability of a proposed product for use in place of a product or products designated by trade names or names, brand name or names, or by the name or names of manufacturers in the contract documents rests on the party submitting the request for approval. The written application for approval of a proposed product must be accompanied by technical data, which the party requesting approval desires to submit in support of his application. The Architect/Engineer will consider reports from reputable independent testing laboratories verified experience records showing the reputation of the proposed product with previous users, evidence of reputation of the manufacturer for prompt delivery, evidence of reputation of the manufacturer for efficiency in servicing its products, or any other written information that is helpful in the circumstances. The application to the Architect/Engineer for approval of a proposed product must be accompanied by a schedule setting forth in which respects the materials or equipment submitted for consideration differ from the materials or equipment designated in the Contract Documents. The degree of proof required for approval of a proposed product as acceptable for use in place of a named product or named products is that amount of proof necessary to convince a reasonable person beyond all doubt. To be approved, a proposed product must also meet or exceed all express requirements of the Contract Documents. If the submittal is approved by the Architect/Engineer an addendum will be issued to all prospective bidders. Issuance of an addendum is a representation to all bidders that the Architect/Engineer in the exercise of his professional discretion established that the product submitted for approval is acceptable and meets or exceeds all express requirements. In the event a submittal shall have been rejected by the Architect/Engineer and there shall have been a request for a conference as

provided in this article pursuant to which conference the said submittal shall have been found to comply with the requirements of this article, a separate addendum covering the said submittal will be issued prior to the opening of bids. In order for the Architect/Engineer to prepare an addendum intelligently, an application for approval of a product must be accompanied by a copy of the published recommendations of the manufacturer for the installation of the product together with a complete schedule of changes in the Contract Documents, if any, which must be made in other work in order to permit the use and installation of the proposed product in accordance with the recommendations of the manufacturer of the product. Unless requests for approvals of other products have been received and approvals have been published by addendum in accordance with the above procedure, the successful bidder may furnish no products of any trade names, brand names, or manufacturer's names except those designated in the contract documents. Any party who alleges that rejection of a submittal is the result of bias, prejudice, caprice, or error on the part of the Architect/Engineer may request a conference with a representative of the Owner, provided: That the request for said conference, submitted in writing, shall have reached the Owner at least five days prior to the date set for the opening of bids, time being of the essence.

1.12 SUBSTITUTIONS

All costs incurred by acceptance of substitutions shall be borne by Contractor. Should any proposed substitute equipment require services in addition to or in excess of services provided in the Contract Documents, these services shall be provided at no extra cost to the Owner.

Request for approval of a proposed product (substitution) shall be accompanied by a schedule setting forth in which respects the materials or equipment submitted for consideration differ from the materials or equipment designated in the Contract Documents and from the design intent, a minimum of 10 days prior to bid date. If there are no deviations or changes required to the design, the submittal shall be accompanied by the following statement: "The proposed material or equipment submitted for approval requires no changes to the Contract Documents to achieve the design intent." Lack of the schedule or statement will result in automatic disapproval of the request.

1.13 INSTRUCTIONS

Instructions: Instruct operating personnel designated by Owner in operation and maintenance of systems prior to the request for final inspection. A manufacturer's service representative shall provide the instructions for each piece of equipment on system. A manufacturer's sales representative is not acceptable. (Instructor shall not be a salesperson but shall be one with service experience on a continuing basis, knowledgeable about the subject equipment.) The Contractor shall give notice to the Architect/Engineer not less than 10 days of the anticipated date of instruction to allow planning by the Owner. The Contractor shall request the instruction date not less than 5 days of the desired date for coordination with the Owner. Operating manual for the equipment/systems on which instructions are being given shall be in the possession of the operating personnel not less than 5 days prior to the date of instruction. The Contractor shall give an orientation session to operating personnel for achieving familiarity (not instructions) of the systems approximately 3 days prior to the instruction date. The Contractor's representative giving instruction shall be knowledgeable in the equipment/systems.

Provide signed statement from operating personnel and school personnel certifying orientation and instructions have been received. Provide typed sequence of operation to be inserted in the maintenance manuals.

1.14 WARRANTIES: Provide manufacturer's warranties prior to final observation.

1.15 NOISE AND VIBRATION: When in operation, the system shall be free from abnormal noise and vibration.

1.16 MANUFACTURER'S RECOMMENDATIONS

All equipment shall be installed in accordance with manufacturer's published installation instructions shipped with the equipment. In the event there is a discrepancy between these specifications or plans and the manufacturer's instructions, no work shall be performed until additional instructions are received. After final balancing, equipment with belt drive shall have their belts operating in the mid-80% position of the adjustable sheave.

1.17 SERVICE CONNECTIONS

General: Prior to excavation for or installation of any piping, determine location, invert, and size at connection. Advise Architect/Engineer of any discrepancies discovered.

Water Service: Connect to existing. Pay all costs.

Sanitary Sewer: Connect to existing. Pay all costs.

1.18 SITE UTILITIES

General: The information shown on the plans is based upon the best information available. Prior to performing any work on the site, the Contractor shall contact appropriate authorities and stake out all underground services in area of excavation. Notify Architect/Engineer of any discrepancies.

Recording: The Contractor shall record the exact location and depth of any existing underground utilities uncovered and all new underground utilities installed under this contract. Dimensions shall be from permanent structures and depth from a benchmark.

Disposition: At the completion of the installation of the utilities, the set of record drawings shall be transmitted to the Architect/Engineer for prompt review.

1.19 TEMPORARY HEAT

Ducted air handling systems shall not be placed into operation for testing or for temporary heat until all walls in areas served by the system have been prepared for painting and the building is broom clean. Portable heaters may be used for temporary heat if required during construction at Contractor expense.

1.20 SPACE CONDITIONS

All apparatus shall fit into the available spaces in the building and must be introduced into the building so as not to cause damage to the structure. Equipment larger than access to equipment spaces shall be disassembled into sub-assemblies for installation. Where deviations from the plans are required to conform to the space limitations, such changes shall be made at no additional cost to the Owner and shall be subject to approval. All equipment requiring service shall be made accessible. Coordinate piping and ductwork installation to avoid conflict with other trades.

1.21 DRAWINGS

Plans are diagrammatic and show the location of the equipment, ducts, and pipes, and are not to be scaled. All dimensions shall be verified at the building site. Prefabrication and/or installation of work from drawings shall be at Contractor's risk. Refer to Architectural plans for exact building dimensions and details.

1.22 CUTTING AND PATCHING

Cut or core drill, where specified, openings in new work for the installation of the mechanical system. Patching shall be performed by the trade whose work is cut. Contractor shall lay out and install his work ahead of the work of other trades wherever possible.

1.23 PRESSURE TESTS

General: Provide 48 hours notification in advance of any test. Test shall be maintained at conditions specified but, in no event, for less than 8 hours minimum duration, unless otherwise noted. Hydrostatic pressure test shall maintain pressure without change, except that due to temperature change. Complete test prior to insulating. Leaks shall be repaired, defective materials replaced, and system shall be retested. No water pressure test shall be conducted in freezing weather where subject to freezing. Strike all joints in copper and steel piping under pressure test. Conduct tests prior to connecting to equipment or isolate equipment from system. Submit affidavit of pressure tests compliance to Engineer.

Domestic Water System: Hydrostatic test; 150 PSIG.

Soil, Waste and Vent System: Static test; 5 feet minimum head. Test system in its entirety or in sections. Plug all openings except highest opening above roof. Water shall be kept in the system, or in the portion under test, for at least one (1) hour before inspection starts; the system shall be tight at all points.

Refrigerant Piping:

Pressure test; 200 PSIG and 150 PSIG dry nitrogen on high and low sides respectively; 6 hours minimum duration.

Vacuum test; 500 microns; 15 minutes minimum duration.

Break vacuum with dry nitrogen and re-evacuate to 500 microns.

Break vacuum with dry nitrogen and re-evacuate to 500 microns.

Break vacuum with refrigerant charge.

Medium and High-Pressure Ductwork: Test in accordance with SMACNA HVAC Air Duct Leakage Test Manual. Ducts shall be tested at 4" W.C. and provide Class A leakage seal.

1.24 CONNECTIONS INTO EXISTING UTILITIES

Where connecting to a utility or service, verify location, sizes, materials, fluid being handled and inverts or elevation of all existing utilities and confirm that new pipes being routed to existing utilities can be installed conforming to code and as shown. Notify Engineer of any conflicts or discrepancies prior to purchasing any materials or performing any work, extension of work or connection, except for excavation or other work to provide access to the concealed utility.

1.25 COMPLETION OF WORK

General: See General Conditions.

Incomplete Work: Prior to starting the observation process at “substantial” or other observations where work is observed, the Contractor shall give the Engineer a list of work not completed, reason for incompletion, and date when said work will be completed.

Observation: At substantial, the entire system shall be demonstrated to be in specified working condition. The following shall be available during the observation:

a. Test and Balance Report.
b. Contractor Representative.
c. Mechanic with hand tools.
d. Specified test data.
e. Certificates.
f. Controls Manufacturer's Representative.
g. Complete Specifications and Drawings with all addenda and revisions.
h. Operating and Maintenance Manuals.
i. Punch list indicating disposition of all items with initials of person confirming completion.

Uncovering of Concealed Work: Floor cleanouts shall be opened for inspection and then reclosed. Other concealed areas shall be opened upon request, where access is provided.

1.26 RECORD DRAWINGS

Responsibility: The Contractor shall retain one set of clean drawings for recording all changes or modifications regarding relocation of pipe, valves, ductwork and equipment, and actual size of installed equipment, ductwork, and piping in red ink. Underground utilities shall be dimensioned from permanent structures and depths recorded.

Disposition: At the completion of the installation of the utilities, the set of record drawings and one set of reproducible of equipment room shop drawings shall be transmitted to the Architect/Engineer for prompt review.

1.27 OPERATING AND MAINTENANCE MANUALS

A. Three (3) bound and indexed Operating and Maintenance Manuals shall be prepared by the Contractor for all equipment and be submitted for approval a minimum of one month prior to "substantial". Two (2) approved copies shall be delivered to the operating personnel at final observation.

B. Each Manual shall be compiled as follows: Data shall be bound in smooth surface hard back commercial quality three-ring notebooks with project identification shown on the front cover and binding back. Identification labels shall be typed and adhered.

C. Notebooks shall have 9 1/2-inch by 11 1/2-inch covers with back width to permit the covers to lie parallel or to converge and have not less than 1 1/2-inch back width.

D. Index divider sheets of heavy Manila paper shall be inserted between each section of the Manual with a 2-inch x 1/3-inch ready-cut shield tab attached to each sheet for identification of sections.
Data sheets and diagrams shall be 8 1/2-inch x 11-inch or be mounted on 8 1/2-inch x 11-inch sheets of 16-pound paper if smaller, with reinforced 11-inch mechanically perforated edge. Drawings and diagrams larger than 8 1/2-inch by 11-inch shall be folded up from the bottom to form a height of 11 inches and folded to the left to form a width of 8 1/2 inches.

1.27.1 Index sheets shall be provided in the order listed with the following identifications typed in capital letters:

PLUMBING FIXTURES.
SYSTEM DISCRETE HVAC COMPONENTS:
(Chillers, Air Handlers, Split System Heat Pumps, etc.)
AIR DISTRIBUTION.
FANS.
FILTERS.
WATER DISTRIBUTION.
CONTROLS.
TEST AND BALANCE REPORTS.
WATER HEATER.

CERTIFICATES.
VALVES AND PIPING SPECIALTIES.

1.27.2 Each Manual shall contain the following information, data, and drawings:

a. List of contents. Insert under front cover.
b. Copy of reviewed submittals, equipment, and materials.
c. Manufacturer's installation, operating and maintenance instructions for each item of equipment with moving parts listed under SHOP DRAWINGS including recommended frequency of inspections and maintenance for one year's period of time.
d. Manufacturer's list of renewal parts for each item of equipment with recommended stock items and quantities indicated.
e. Control diagrams, electrical interlock diagrams, and control valve lists.
f. Copy of shop drawings showing layouts and construction details.
g. Copy of Test and Balance Reports including list of instruments and description of methods employed.

1.28 PROTECTION OF MATERIALS AND EQUIPMENT

1.28.1 Delivery and Storage: Equipment and materials shall be carefully handled, properly stored, and adequately protected to prevent damage before and during installation, in accordance with the manufacturer's recommendations and as approved by the Engineer. Damaged or defective items shall be replaced. Equipment will not be delivered to the job site unless it can be stored inside the building or in an enclosed area such as a trailer or warehouse.

a. Deliver, store, protect, and handle products to site according to manufacturer's recommendations.
b. Deliver materials to site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
c. Store insulation in original wrapping and protect from weather and construction traffic.
d. Protect insulation against dirt, water, chemical, and mechanical damage.

1.28.2 Maintenance of Filters: The contractor shall be responsible for maintaining all air filters until final acceptance of the building. If part of the building is occupied prior to final acceptance, the Contractor shall be responsible for maintaining any air filters in systems that do not serve occupied areas. No air system shall be operated at any time without air filters, and filters shall not be allowed to become overloaded with dust and dirt.

1.28.3 Throwaway Filters: Install new set of filters prior to test and balance. Provide spare set of filters at final observation.

1.28.4 During Construction: Pipe opening shall be closed with caps or plugs, floor drains excluded which shall be taped. All equipment shall be covered and protected against water, dirt and chemical or mechanical injury.

1.28.5 Prior to Final Observation: All materials and equipment shall be cleaned. Chipped or scraped paint shall be retouched to match. All dents and sags in ductwork and equipment casings shall be straightened.

1.28.6 Equipment Painting: Equipment which has been damaged beyond the point of retouching or has been retouched not to match shall be painted to match factory finish.

1.28.7 Potable Water System:

1.28.7.1 General: Flush all debris and pipe compound from domestic water system.

1.28.7.2 Disinfection: Disinfection shall be in accordance with Environmental Protection Division, Florida Department of Environmental Protection, "Rules for Safe Drinking Water."

1.28.7.3 Sterilization: Domestic water piping system shall be sterilized, complying with Federal Specifications BB-C-120. Work shall be performed by licensed operator.

1.28.7.4 Water Sample Certification: Water samples from the sterilized piping system shall be tested and approved by the local Health Department.

1.29 CERTIFICATES

For main HVAC system components and controls, start-up, testing, and placing into operation shall be performed by the field representatives of the manufacturers, and certificates of the manufacturers shall be provided on the letterheads of the manufacturers in which the manufacturer certifies that the equipment has been installed in strict compliance with the manufacturers recommendations and is operating properly. The manufacturers shall list in the certificate the item or items furnished to the job. The Contractor shall coordinate the performance of the aforesaid services and shall, in all cases where the equipment of two or more manufacturers tie in and function together, such as controls and air conditioning apparatus, require the field representative to perform simultaneously the initial start-up, the testing, and the placing of their equipment into operation. Start-up is defined as putting the equipment into action. Testing is defined as performing such testing as is stipulated in the Contract Documents to be performed. Placing into operation is defined as operating the equipment for a sufficient period of time for the determination to be made that it is performing properly. Notification shall be given 48 hours in advance of start-up.
Upon completion of all mechanical work, the Contractor shall submit a certificate stating that all mechanical systems have been tested and that the installation and performance of all systems conform to the requirements of the Contract Documents.

1.30 MOTORS

1.30.1 General: All motors shall have all copper windings and leads. (Aluminum is not allowed.) Motors for base mounted pumps and belt driven equipment shall have cast iron yoke and bearing housings. All motors shall have rated horsepower at least 10 percent above indicated brake horsepower of equipment including belt losses and inlet vane losses.

1.30.2 Efficiency and Power Factor: The minimum efficiency and power factor for motors 1 HP and larger shall be:

Motor HP	Minimum Efficiency	Minimum Power Factor
1 to 3	82%	85%
5 to 15	86%	87%
20 to 40	90%	88%

1.30.3 Protection: All single-phase motors shall have integral overload protection in accordance with the National Electrical Code.

1.30.4 Voltages: Refer to Electrical Drawings for voltage and phase.

1.31 STARTERS AND CONTACTORS

1.31.1 General: Provide starters for all motors furnished hereunder unless otherwise noted. Unless otherwise noted, all three phase motors shall be provided with combination starter and circuit breaker. Starters shall be NEMA type starters. IEC type starters are not allowed.

1.31.2 Enclosures: NEMA 1 indoors; NEMA 3R outdoors, unless otherwise noted.

1.31.3 Accessories: See Control Section for sequence of operation.

1.31.4 Phase Failure/Phase Reversal Protection: Provide for all motors above 3 HP.

1.31.5 Combination Starters with Circuit Breakers, Three Phase Single or Two Speed Motors: Circuit breaker shall be adjustable magnetic trip type with 10,000-amp minimum symmetrical amps interrupting capacity. Breaker operating mechanism shall be lockout type. Contactor shall be magnetic across-the-line type with H.O.A. switch in cover of NEMA 1 enclosure. Provide two auxiliary contacts (minimum).

1.31.6 Overload Elements: All legs of multi-phase starters shall be protected with overload elements. Overload elements shall be sized in accordance with National Electrical Code.

1.31.7 Coils: All holding coils shall operate on 120 volts. On 208-volt starters, coil voltage shall be obtained by neutral conductors. Provide built-in control transformer on all 480-volt starters.

1.31.8 Pilot Lights: Provide a pilot light with red jewel in cover, lit when starter is closed, for all motor starters. Pilot light bulb shall be replaceable.

1.31.9 Relays: Mechanically held type with number of poles and arrangement as noted, in NEMA 1 enclosure unless otherwise noted.

1.31.10 Starters Specified Under Electrical: See Electrical drawings for starters in motor control center and any other starters specified under Electrical Work.

1.32 PIPING IDENTIFICATION

1.32.1 General: Provide labeling in accordance with ANSI/ASME 13.1 requirements. Provide stenciled piping identification similar to existing identification, and direction markers. Installation shall be after completion of thermal insulation work and painting.

1.32.2 Materials: All piping systems specified under this Division within the building shall be identified with clear block letters stenciled on the outside surface of pipe or pipe covering to indicate contents by abbreviated letters, and direction of flow.

1.32.3 Schedule: Provide a Piping Identification Schedule framed under glass.

1.32.4 Locations:

Mechanical Equipment Rooms and exposed in other rooms than Mechanical Rooms:

A. Within 18-inches of each valve.

B. Within 3'- 0" of each 90° elbow, tee, connection to equipment or vessel and point where pipe enters shaft or pierces outside wall.

C. At not over 5' intervals along all exposed piping.

Above Suspended Ceilings:

A. Within 18-inches of each valve or valve assembly.
B. At tees, identify both main and branch within 3 feet of tee.
C. Within 3-feet of each 90° elbow.

Direction Markers:

Material - Painted in gloss enamel.

Color - Black, unless otherwise noted in Painting Section.

Location - Arrow adjacent to each band to indicate flow away from band.

Lettering:

Letters: 1/2-inch high on pipe OD or pipe covering OD 3/4-inch thru 1 1/4-inch, 3/4-inch high on pipe OD 1 1/2-inch and 2-inch, 1 1/4-inch high on pipe OD 2 1/2-inch thru 6-inch, 2 1/2-inch high on pipe OD of 8 and 10 inches, 3 1/2-inch high on pipe OD over 10 inches.

Directional Arrows: 4-inch long and 1/2-inch wide.

Letters shall be black on white or light color finishes, white on dark color finishes. Refer to Painting if pipe is to be painted.
Legend:

System	Abbreviation	Background Color
Domestic Cold Water	DW	Green

1.33 VALVE LOCATION

All valves shall be accessible after completion of construction.

1.34 DUCT ACCESS DOORS LABELING

Access doors to fire dampers and smoke dampers shall be labeled in accordance with NFPA 90A.

1.35 NAMEPLATES

General: Provide for all equipment, motor starters, remote push button stations, insertion type thermostats, thermostats interval timers, night thermostats, remote bulb thermometers, filter gauges, terminal units, fan-powered units, fans, panel mounted controls, manual damper operators, and all other equipment specified.

Designation: The name of each piece of equipment or usage shall be etched in 1/4-inch maximum, 1/8-inch minimum height letters and mounted on or adjacent to piece of equipment.

Type: White core black Bakelite secured with epoxy glue.

1.36 EXISTING/NEW WORK

Where new work is specified tying into old work and materials are different from existing, the Contractor shall request a clarification from the Engineer prior to performing the work.

1.37 EQUIPMENT BELT AND COUPLING GUARDS

Provide guards shielding the perimeter and face of all new belt drives, shafts, and couplings. Provide openings opposite drive and driven shafts to permit use of revolution counter. Guards for fans shall be supported from the fan and mounting base, independent of the floor or housekeeping pad.

1.38 VALVE LOCATION

All valves shall be accessible after completion of construction.

1.39 DUCT ACCESS DOORS LABELING

Access doors to fire dampers and smoke dampers shall be labeled in accordance with NFPA 90A.

1.40 NAMEPLATES

General: Provide for all equipment, motor starters, thermostats, controls, night thermostats, fans, panel mounted controls, manual damper operators, and all other equipment specified.

Designation: The name of each piece of equipment or usage shall be etched in 1/4-inch maximum, 1/8-inch minimum height letters and mounted on or adjacent to piece of equipment.

Type: White core black Bakelite secured with epoxy glue.

1.41 FERROUS FASTENERS

All ferrous fasteners not having a corrosion resistant plated finish shall be painted to prevent rust.

1.42 EQUIPMENT BELT AND COUPLING GUARDS

Provide guards shielding the perimeter and face of all new belt drives, shafts, and couplings. Provide openings opposite drive and driven shafts to permit use of revolution counter. Guards for fans shall be supported from the fan and mounting base, independent of the floor or housekeeping pad.

1.43 INSTALLATION OF EQUIPMENT

Install and connect all appliances, equipment, and appurtenances as specified, indicated, or required in accordance with the manufacturer's instructions and recommendations. Furnish and install complete auxiliary piping, water seals, valves, electric connections, and equivalent items, recommended by the manufacturer or as required for proper operation.

1.44 DEMOLITION PLAN FOR CLARIFICATION

The demolition plan has been prepared to assist the contractor in determining the scope of demolition work and should not be construed to be all of the demolition required. The contractor shall visit job site (after carefully reviewing the contract documents) and determine exact areas and quantities of existing material to be removed to accomplish new construction.

1.45 INDOOR AIR QUALITY

Portions of the building will be in use and occupied during construction. Contractor shall schedule work and provide temporary ventilation and/or isolation to ensure that fumes from welding, other construction tasks, and out-gassing from construction materials do not migrate to occupied areas.

END OF SECTION

SECTION 15100 - BASES, SUPPORTS & SLEEVES

1. SLEEVES IN SLABS, MASONRY WALLS, AND PARTITIONS

1.1 General: Provide sleeves in all slabs, rated walls/partitions unless otherwise noted. Refer to Section 15300 for sleeves required for duct penetrations.

1.2 Masonry: Twenty-gauge galvanized steel. Sleeves shall be of size to include the insulation with minimum gap around insulation. Omit sleeves on cast iron pipe through slabs on grade. Omit sleeves in openings core drilled in walls and floors.

1.3 Rated Drywall Partitions: Twenty-gauge galvanized steel. Sleeves shall be of size to include the insulation with maximum gap around insulation of 1/8-inch.

1.4 Non-Rated Drywall Partitions: Omit sleeve.

2. SEALING OF SLEEVES AND OPENINGS IN FLOORS AND WALLS

2.1 Sleeves and openings in the following walls and floors shall be sealed watertight for smoke/fire protection as applicable:

a. Exterior walls.
b. Mechanical room walls.
c. Fire rated partitions and smoke partitions.
d. Floors above grade.

2.2 Seal openings for fire protection and to make watertight with foam or putty type sealant, U.L. Classified, for penetration seal maintaining fire rating of barrier penetrated, having a flame spread rating of 20 in accordance with ASTM E-84-84, and capable of withstanding 450° F temperatures without softening, unless otherwise noted. Material shall comply with Federal Spec TTS-230-C Type II Class B for sealants. Dow Corning 2001 Fire Stop Foam and Dow Corning 2000 Caulk, Semco PR-855, 3M Products Fire Barrier Caulk CP 25 N/S (no sag) and Putty 303 (no filler sheets allowed), Metacaulk 835, Hilti CS 240 Caulk.

3. BOLTS AND INSERTS

3.1 Provide inserts and bolts for supporting pipes and equipment.

4. PIPE SUPPORTS

4.1 General: Hanger sizes shall conform to the size of the pipe where in contact with the pipe and shall conform to the O.D. of the insulation where installed outside insulation. Hangers and supports shall be hot-dipped

galvanized or primed and painted.

4.2 Insulated Pipes: Hangers for horizontal refrigerant, piping insulated with rigid insulation, condensate drain piping and trapeze supports shall be outside insulation, unless otherwise noted. Hangers for all other piping and riser clamps shall be inside insulation.

4.3 Cast Iron, PVC Pipe: Clevis hanger, B-Line B-31OO, Grinnell Fig. 260, Globe 404, Michigan Hanger Fig. 400. Do not hang pipe in plumbing chases.

4.4 Copper Tubing Unless Otherwise Noted: Copper clad adjustable swivel ring, B-Line B-3170CT, Grinnell Fig. CT-99C, Globe 301, Michigan Hanger Fig. 101; copper plated.

4.5 Steel Pipe and Insulated Copper: Clevis hanger, B-Line B-3100, Grinnell Fig. 260, Globe 404, Michigan Hanger Fig. 400, unless otherwise noted.

4.6 Buried Pipe: Rest body or barrel on solid earth. Provide bell holes for all hubs.

4.7 Vertical Pipes:

4.7.1 Up to 3" Hanger Size:

4.7.1.1 Copper Tubing Split Pipe Clamp: B-Line 3198HCT, Grinnell Fig. No. CT138R, Michigan Hanger Fig. 456.

4.7.1.2 Extension Split Pipe Clamp: B-Line B-3198R, Grinnell Fig. No. 138R, Michigan Hanger Fig. 455.

4.7.1.3 Multiple Tubing/Pipes: Green epoxy coated, cold formed, lipped steel channel horizontal member, 1 5/8" x 1 5/8" x 12 ga. base. Secure pipes to bases with pipe/tubing clamps and elastomer cushion. B-Line Vibracushion, Grinnel PS1400.

4.7.2 Over 3": Shelf bracket formed of 2" x 2" x 1/4" angle and "U"-bolts. Riser clamps; see detail.

4.8 Horizontal Steel Pipe from Steel Bents: B-Line B-3100, Grinnell Fig. 260-Michigan Hanger Fig. 400 or Globe 409 hangers with B-Line B-3036, Michigan Hanger Fig. 300 or Grinnell Fig. 88 clamps. Rods shall be 3/8-inch diameter.

4.9 Horizontal & Vertical Pipes 1" and Smaller along Walls: Concealed screw hanger, galvanized finish. B-Line B-3100, Michigan 400 or Globe 400.

4.10 Multiple Pipes (Trapeze) Support:

4.10.1 Multiple Pipes Up to 3" Maximum Size: Green epoxy coated, cold formed, lipped steel channel horizontal member, not less than 1-1/2" x 1-1/2", No. 12 gage, designed to accept spring held, hardened steel nuts.

4.11 Horizontal and Vertical Pipes at Walls 1 1/4-inch and Larger: Offset strap constructed of 1 1/4-inch x 1/4-inch flat steel and "U" bolts.

4.12 Hanger Spacing Schedule:

4.12.1 General: Spacing indicated is maximum distance based on pipe material and size. Closer spacing shall be provided to conform to structural spacing and load capacity of structural support points.

4.12.2 Cast Iron Pipe:

a. 5 ft. lengths - maximum 5 ft. on centers.
b. 10 ft. lengths - maximum 8 ft. on centers.

4.12.3 PVC Pipe: Maximum 5 ft. on centers. Support at base of each stack. Conform to manufacturer's recommendations where more stringent.

4.12.4 Copper Pipe:

a. Up to 1 1/4-inch - maximum 5 ft. on centers.
b. 1 1/2-inch to 4 inch - maximum 8 ft. on centers.

4.12.5 Vertical Pipe: Same as horizontal spacing. Use riser clamps at upper floor slabs to support vertical weight of pipe; a minimum of every floor for cast iron pipe. Space as noted for other piping. Support for chilled water pipe shall be inside pipe insulation. Insulate chilled water support with foamed spray insulation.

4.12.6 Changes in Direction: Provide support within 2 feet of any change in direction or unconnected end. Exception: Piping 1-inch and smaller shall be supported within 6 inches of connected end.

4.13 Hanger Supports: Round rod to:

4.13.1 Precast Masonry: Phillips "Red Head" or Hilti Kwik-Bolt concrete anchors. Anchors must center on 'tees'.

4.13.2 Precast Concrete Hollow Core Slabs: Support pipe by trapeze with threaded rod up through joint in slabs to steel washer plate and nut. Do not drill slab for pipe support attachment.

4.13.3 Steel Bar Joists: B-Line B3033, Michigan Fig. 310, Grinnell Fig.61 or Globe 110.

4.13.4 Hollow Masonry Units: Toggle bolts.

4.13.5 Wood Beams: B-Line B3213, B3227; Michigan 41, 44. (Individual hangers only).

5. EQUIPMENT BASES

5.1 General: Provide housekeeping bases as shown or listed below. Rough up slab under bases before pouring concrete.

5.2 Materials: Omit test cylinders for concrete poured under this section.

5.3 Size: Bases shall be rectangular, unless otherwise indicated, with vertical sides 4 inches from centerline of anchor bolts or 2 inches from edge of equipment supports, whichever provides the larger dimension, side of equipment/base edge unless otherwise noted.

5.4 Chamfer: ¾-inch on edges and corners.

5.5 Reinforcing: 6" x 6", 10/10 WWF at mid-depth of slab.

6. ANCHORS

6.1 Provide anchors where shown on the drawings.

7. VIBRATION ISOLATORS

7.1 General: Provide vibration isolators for all equipment with motors. All isolation devices shall be selected for uniform static deflections according to distribution of weight and for the lowest disturbing frequency of the unit.

7.1.1 Rubber-in-Shear Isolators: Isolators shall have housings for bolting to equipment with molded mound shaped element. Single and double rubber-in-shear isolators shall be designed for 1/4-inch and 1/2-inch deflection, respectively, under the imposed load.

7.1.2 Spring Isolators: Spring isolators shall be unhoused, freestanding and laterally stable, unless otherwise noted. Isolators shall be equipped with neoprene sound deadening pads with load distributing base for bolting to building structure and leveling bolts. Isolators not bolted to equipment shall have non-skid rubber pads. Springs with 2-inch deflection or more shall have neoprene limit stops to prevent undue motion during start and stop, unrestrained during normal operation.

7.2 Minimum Requirements:

7.2.1 Minimum Equipment Isolation: Vibration isolators for equipment on grade or equipment up to 1 HP on floors other than grade shall be selected for following minimum isolation efficiencies, unless otherwise noted.

a. Below 450 rpm 80% efficiency.
b. 451 to 900 rpm 85% efficiency.
c. 901 to 1700 rpm 90% efficiency.
d. Above 1700 rpm 90% efficiency.

7.2.2 Equipment Isolation above Grade and 1 HP: Vibration isolators for equipment above 1 HP other than on grade shall have the following minimum deflections or efficiencies, unless otherwise noted.

a. Below 450 rpm 90% efficiency.
b. 451 to 900 rpm 2-inch deflection.
c. 901 to 1700 rpm 1 1/2-inch deflection.
d. Above 1700 rpm 1-inch deflection.

7.3 Equipment:

7.3.1 Air Handling Units: Rubber-in-shear isolators.

7.3.2 Suspended Fans:

a. Direct Drive: Rubber-in-shear.

7.3.3 Condenser Unit/Heat Pump Unit: Rubber-in-shear. See detail.

7.4 Manufacturers: Amber/Booth, Consolidated Kinetic, Korfund, Mason, Peabody Noise Control, Vibration Eliminator Co. or Vibration Mounting & Control, Inc.

-- END OF SECTION –

SECTION 15200 - HVAC CONTROLS

1. General
Provide commercial thermostats, humidity sensors and interconnecting wiring as specified herein.

2. Submittals
Include the following:

A. Complete shop drawings of entire control system.

B. Composite wiring diagrams indicating equipment interlocks, including exhaust fans.

C. Written sequence of operation.

D. Equipment data sheets for all major components, including but not limited to:

1) Time Clock

2) Thermostats

3) Humidity sensors

3. Warranty
At completion of final test of installation and acceptance. Warrant equipment for one year for defects in workmanship and material under normal use and service. Replace or repair free of charge equipment proven to be defective in workmanship or material.

4. Products

4.1 Acceptable Manufacturers: The following manufacturers shall be acceptable for the controls system installation: Johnson Controls, and Honeywell, or Engineer approved equivalent.

4.2 Programmable Commercial Thermostat

A. Contractor shall provide a programmable commercial thermostat/humidistat for each system.
B. Units shall provide the following features as minimum requirements:

1) Seven-day programming with an independent single occupied/unoccupied time schedule for each day of the week.

2) Individual temperature set points for both occupied heat, and cool and unoccupied heat (low limit), and cool (high limit).

3) Optimization of startup time depending on building load.

4) Battery backup to retain program and maintain clock function during power failure.

5) Three-hour override of unoccupied program, accessible with opening unit cover.

6) Automatic heat/cool change over.

7) Switching subbase for manual selection of system and fan operation, heat switch and emergency heat switch.

8) Time delay relay.

9) Output to energize outside air damper when compressors or electric heat is energized.

10) Provide with clear plastic, heavy-duty, lockable tamper-proof cover.

4.3 Components

A. Automatic Control Damper: Aluminum parallel blade dampers by Arrow Louver and Damper Corporation, Johnson D-1300, or approved equal by Ruskin.

B. Electric Damper Motors: Damper motors shall be capable of providing smooth, two position control under design temperature and pressure conditions.

C. Programmable Time Clock: Provide Programmable Controller for time clock functions with minimum of two circuits, battery backup, relays for start and stop of fans and outside air dampers.

D. Humidity Transmitter: Solid-state transmitter with built-in non-organic sensor for space sensing, 20 – 80% range.

4.4 Installation

A. Prepare coordinated composite wiring diagram showing all interlock wiring associated with starters, control panel, DX refrigeration compressors and other equipment as applicable.

B. Provide sequence of operation and as-built drawings framed under Plexiglas and placed in mechanical room. All prints to be of "non-fading" print process.

C. Electrical:

1) Furnish electrical control components under this Division.

2) Furnish and install all control wiring under this Division in accordance with NEC and local codes.

3) Line voltage devices, such as electric thermostats, shall be installed under Division 16.

4) Route wiring from the sequencers, and actuators, in a separate conduit from line voltage wiring or other conductors that supply highly inductive loads, the use of shielded cable is required. Use Belden No. 22 gauge Beldfoil 8761 or equivalent for runs up to 250 feet.

5) Furnish and install all sensor and actuator wiring under this Division.

4.5 Quality Control

A. Demonstrate the entire sequence of operation for all systems to the Architect/Engineer and the Owner.

B. Provide a minimum of two hours of instruction to operating personnel in the operation and maintenance of the control system.

-- END OF SECTION --

SECTION 15300 - AIR DISTRIBUTION SYSTEM

1. GENERAL

1.1 Requirements: Include supply, return, exhaust, relief and outside air ductwork; acoustical line; and accessories as shown, to make a complete air distribution system. References are to SMACNA HVAC Duct Construction Standards, unless otherwise noted. Duct shall be galvanized steel construction. All duct dimensions are net metal unless otherwise noted.

2. LOW PRESSURE DUCTWORK

All duct work shall be low pressure construction unless otherwise noted.

3. MOISTURE INTEGRITY

3.1 Roof: All roof fans, curbs, outside air intakes, and roof penetrations shall be watertight.

3.2 Walls: All wall fans, louvers, and wall penetrations shall be watertight.

4. OFFSETS AND CHANGES IN DIRECTION

4.1 All changes in direction in exhaust, return and supply duct shall be made with 90° elbows with turning vanes (SMACNA type RE2) or 1.5 radius elbows without vanes (SMACNA type RE1), unless otherwise noted. Mitered elbows and mitered offsets are not allowed.

5. SHORT RADIUS ELBOWS (SMACNA TYPE RE3)

5.1 Provide only where shown on drawings. Elbows shall be constructed in accordance with Fig. 2-2. Provide number and location of vanes in accordance with Fig. 2-5. Construct and install vanes in accordance with Figure 2-6.

6. DUCT FITTINGS AND ACCESSORIES

6.1 Duct Hangers: Figure Nos. 4-1 through 4-9 and Tables 4-1 through 4-3. Ducts shall not be supported from metal roof deck unless otherwise noted, 16" x 16" and smaller excluded.

6.2 Flexible Connections: Install in duct connections to equipment, where shown and at all equipment with motors unless otherwise noted, of fireproof material composed of watertight, impregnated 30-ounce glass fabric. Figure 2-19. Do not install on curb mounted fans.

6.3 Branch Connections and Runouts:

6.3.1 General: Refer to drawings for type required. Flexible duct shall be used only where shown on drawings. Refer to detail for exact appurtenances.

6.3.2 Rectangular and Rectangular to Round Runouts: Galvanized sheet metal fitting for runout take-off from

low pressure rectangular trunk ducts - SMACNA Fig. 2-8, 45° entry. Use where rectangular branch and runout ducts connect to rectangular trunk ducts and where the dimension of round branch fittings exceeds height of trunk duct so as to prohibit their use for round branch ducts. Factory fabricated fitting with adhesive gasket are acceptable: Flexmaster "STO".

6.3.3 Runouts to Sidewall Grille: Figure 2-8; 45° entry tap, unless otherwise noted. See detail.

6.4 Angle Frames: 24 gauge galvanized with mitered corners. Provide where exposed ducts penetrate walls and floors except where fire dampers or sidewall grilles or registers are installed. Secure to ducts and caulk between frame and wall.

6.5 Access Panels & Doors: Hinged, insulated access doors with lock; Figure 2-12, insulated where duct is insulated or lined, with only metal exposed to the air stream. Door lock shall be handle or cam lock (screws are not acceptable). Inside dimensions shall be sized to provide access to indicated damper, 12" minimum except one dimension shall be 2" smaller than duct for ducts under 14". Provide at all concealed dampers, smoke dampers, fire dampers, duct mounted coils, and where shown. Seal door duct joints airtight for indicated duct pressure in accordance with manufacturer's recommendations shipped with door. Maximum leakage per door at 6" of water pressure shall not exceed 2 CFM. Factory fabricated doors are acceptable; Ventlok, Airstream, D.A.D., Prefco HAD, Cesco CAD-10, National Controlled Air ADR, Nailor Hart 0800, Flexmaster "Inspector" Series.

6.6 Turning Vanes: Figure Nos. 2-3 and 2-4; double vane, double thickness. Provide at all square elbows in rectangular supply, return and exhaust duct, unless otherwise noted by a specific written note. Install long turning vanes where shown. Factory fabricated vanes similar to above are acceptable.

6.7 Trapeze Multiple Duct Support: Figure No. 4-4 and Table 4-3.

6.8 Duct Joint Sealant: Seal transverse joints in all low-pressure metal supply, exhaust and return ducts with waterproof mastic joint sealant; Marahon 460 high-velocity duct sealer; Kingco 11-376; Tuff Bond #29; 3M-800.

6.9 Easements: Figure 2-10.

6.10 Manual Volume Dampers: Figure Nos. 2-14 and 2-15. Dampers shall be opposed blade when larger than one blade. 2" x 1/2" x 1/8" steel channel frame with blade stops top and bottom; 16-gauge steel blades with formed edge groove to have 3/8" interlock between adjacent blades, 7" maximum blade width; self-lubricating oilite bronze or nylon bearings with 1/2" diameter cadmium plated shaft extended 6" beyond frame; blade linkage; locking quadrant and rust inhibitor coating.

6.11 Test Openings: Provide plugged brass 3/8" openings in ducts and apparatus casings adjacent to all thermometer elements, and temperature pressure transmitters.

6.12 Paint: Inside of ducts visible thru grilles, registers and diffusers shall be painted flat black.

6.13 Transformations: Changes in duct sizes shall be made via transformations. Transformations shall be provided between equipment and duct where sizes are not the same. Where duct transformations

occur, unless otherwise noted, the slope shall not be greater than 1" in 4", with slope of 1" in 7" space permitting.

6.14 Duct Openings:

6.14.1 Openings at Non-rated Walls and Partitions: Ducts shall have openings 1/2" larger, maximum, than the overall duct dimensions framed in place when walls are constructed, except for sidewall grilles. Note different requirements for sound isolation treatment and special appurtenance. Space between duct and structure shall be filled with fiberglass duct insulation.

6.14.2 Openings at Fire Dampers & Smoke Dampers at Rated Walls/Partitions & Floor: Provide fire, smoke or combination fire/smoke damper installed in opening accordance with manufacturer's instructions to maintain U.L. classification.

6.15 Traverse Taps: Galvanized construction for permanent attachment to duct with positive locking type cap to prevent air leakage when not in use. Locate in accordance with AABC or NEBB recommendations.

7. LOW PRESSURE METAL DUCT CONSTRUCTION

All low-pressure duct shall be 2-inch static pressure rating, Class "B" seal, in accordance with SMACNA Standards of best bloom galvanized steel of gauges and construction, unless otherwise noted. Metal stamp shall be visible after installation showing metal gauge. No gauge lighter than 24 shall be used for ducts.

7.1 Longitudinal Joints and Seams: Pittsburgh lock (19-inch and over) for corner seams or button punch snap lock (up to and including 18-inch only) sealed airtight with high pressure duct sealant before assembly; grooved seam for all other seams.

Gauge and reinforcing is determined by dimension of longest side of duct.

Reinforcing at joints is same size as reinforcing between joints.

7.2 Fasteners: For angle reinforcing and bar slips on short sides shall be 6" O.C. maximum at girth joints.

7.3 Fasten Round Ducts: 6" O.C. maximum at girth joints.

7.4 Drive Slips: Shall be used on short sides 18" or less and reinforcing drive slip shall be used on short sides 19 to 30", except when pocket lock is called for on long sides, use on all four sides.

7.5 Joints: On longer sides shall be not less than 1/4" shorter than duct dimension.

All dimensions and sizes are inside metal measurements in inches, unless otherwise shown.

8. FLEXIBLE DUCT

8.1 Core: Metal Helix mechanically bonded to an acoustically transparent flexible fabric with rip stop reinforcement; U.L. listed Class 1 air duct connector; compliance with NFPA 90A and 90B; pressure rated to 10" W.G. and 200° F. Helix not constructed of corrosion resistant metal shall be coated to prevent corrosion. Unreinforced polyester material is not acceptable for core.

8.2 Insulation: All flexible duct shall be insulated unless otherwise noted. Insulation shall be 1" minimum thick, 3/4 lb. minimum density fiberglass with vapor barrier jacket. Aluminum foil jackets shall be reinforced.

8.3 Installation: SMACNA HVAC Duct Construction Standards, First Edition, 1985. Flexible duct shall be installed in a fully extended condition free of sages and kinks, in maximum lengths of 5 feet (in minimum lengths to make smooth connection). Flexible duct shall NOT be utilized to correct for misalignment or round to oval transitions. All flexible duct connections shall be made by coating the interior of the duct to a depth of 3" with an approved high pressure duct sealer, and secured in place over sheet metal collar with 1/2" wide positive locking steel straps. Vertically suspended ducts shall be additionally secured with a minimum of three sheet metal screws on no greater than 8" centers. Horizontal support shall be provided at maximum intervals of 3 feet with 3" wide flat banded material or as recommended by manufacturer. Wire hangers shall not be used under duct. Flexible duct shall be utilized only where shown or specifically called for in specifications.

8.4 Manufacturers: Flexmaster Type 6M acoustically insulated, Thermaflex MKE or approved equivalent by prior approval.

9. DUCTWORK ACOUSTICAL LINER

9.1 Figure Nos. 2-22 thru 2-25: Glass fiber duct liner, 3-pound density, with mat faced, coated finish. Liner shall be glued to inside of ductwork during fabrication with fire retardant adhesive, 95% maximum adhesive coverage, and further anchored with liner fasteners, type 3 or 4, located in accordance with SMACNA Figure 2-22. Adhesive shall be Benjamin Foster 81-60, Insul-Coustic #225 supply, return, and exhaust ducts where noted and all outside air ducts. Duct sizes shown include allowance for liner thickness, unless otherwise noted. Longitudinal and traverse joints on supply ducts shall be coated with adhesive and shall be under compression when installed to prevent air leaks and duct condensation. Liner shall be 1" thick, unless otherwise noted. Line all R.A. ducts/plenums.

9.2 Fasteners: Shall start within 3" of the upstream transverse edges of the liner and 3" from the longitudinal joints and shall be spaced as shown in Figure 2-22.

10. GRILLES, REGISTERS & DIFFUSERS

10.1 Provide Supply, Return, Relief and exhaust air grilles and registers and ceiling diffusers as shown. Model numbers shown are Titus. Grilles by Anemostat, E.H. Price Co., Krueger, Tuttle & Bailey, or Metalaire are acceptable. Grilles by Carnes are not acceptable. Refer to Schedule. Interior finish of diffusers shall be painted flat black where visible. Where grilles having removable cores are specified and a manufacturer is listed which does not make removable cores, auxiliary frames shall be provided. Coordinate locations of ceiling diffusers and grilles with lights and ceiling gird. Lattice core grilles for installation in Tee-bar ceiling systems are nominal size. Size to fit applicable ceiling system.

10.2 Basis of Design: Grille sizes shown are based upon Titus net areas and performance. Grilles of other listed manufacturers must be adjusted in size to provide equal or greater net area and performance. Performance is based on maximum static loss of 0.06" W.G. and NC = 27 or less (with damper wide open), unless otherwise noted.

11. FIRE DAMPERS

11.1 General: Dampers shall bear a label by U.L., and dampers shall close against the maximum calculated airflow of that portion of air duct system in which they are installed and shall be dynamic rated. Unless otherwise shown, dampers shall be as follows:

11.2 Butterfly Dampers: Comply with NFPA 90A, 1991 requirements. Provide where shown for round ceiling diffuser drops. Dampers installed in supply outlet collars shall not interfere with the air distribution of the outlets.

11.3 Retractable Blade Dampers: Designed to comply with NFPA 90A requirements, with U.L. gauge sleeve and angle frame for permanent installation. Damper shall be Type 'A', same size as duct unless otherwise noted. Net damper opening of low resistance type 'B' dampers in retracted position shall not be less than 90% of cross-sectional area of attached duct. Dampers installed in supply outlet collars shall not interfere with the air distribution of the outlets. Dampers in medium pressure ducts shall be Type 'C'. Dampers shall have 1 ½ hour rating unless otherwise noted. Damper sizes up to and including 30" x 30" shall be single damper unit.

11.4 Fusible Links: Provide three (3) spare links of each size and rating provided on project.

11.5 Manufacturers: Advanced Air, Inc.; American Warming and Ventilating; Air Balance; Air Stream; Louvers and Dampers; United; Ruskin; Pacific Air Products; Phillips; Safe-Aire; Air Control Projects; Venco; National Controlled Air; Nailor; CESCO.

12. LOUVERS

4 inch deep, sight proof, 12-gauge (0.081") extruded aluminum weatherproof (Chevron style drainable) blades and frame, prime coat finish. Back-mounted, removable ½" mesh, .051" aluminum bird screen with frame and security bars. Greenheck SED-401 or approved equivalent.

13. BRICK VENT: Coordinate with Architectural

Clear anodized extruded aluminum with insect screen. Airline Louvers, Airolite, Air Balance, Dowco, Industrial Louvers, Louvers & Dampers, Ledbetter, Tuttle & Bailey ABV, Sunvent.

14. DUCT SECURITY BARRIER

14.1 General: ¾" diameter vertical bars welded to horizontal bars with maximum spacing of 6-inches on center.

14.2 Layout Basis: Krueger 1390.

14.3 Manufacturers: Krueger 1390, Titus SG-BG, Anemostat Security Bars, Metal Form MFX Duct Barrier.

-- END OF SECTION --

SECTION 15400 - HVAC EQUIPMENT

1. GENERAL

1.1 Requirements specified herein are minimum. All equipment, when installed, shall perform equal to, or exceed specific requirements. If the Test and Balance Report indicates any equipment is performing at less than specified capacity, the manufacturer shall provide field testing to correct or demonstrate performance as specified to the Engineer.

1.2 INSTALLATIONS: All equipment shall be installed in accordance with manufacturer's published installation instructions shipped with the equipment. In the event there is a discrepancy between these specifications or plans and the manufacturer's instructions, no work shall be done until additional instructions are received. After final balancing, equipment with belt drive shall have their belts operating in the mid-80% position of the adjustable sheave.

2. SPLIT SYSTEM AIR-TO-AIR HEAT PUMPS:

2.1 Air Cooled Heat Pump Unit. (3 to 6 tons only)

2.1.1 MANUFACTURERS

A. Acceptable manufacturers:

1. American Standard / Trane
2. Carrier
3. Gree

2.1.2 GENERAL: Unit shall be cataloged for continuous operation at 115° ambient maximum; consisting of condensing coil, vertical air discharge fan, compressor(s), hot gas muffler, liquid receiver, moisture indicating sight glass, refrigerant valves, reversing valve, interconnecting refrigerant piping, charging valves, starters, controls, and internal wiring factory assembled on one common base in a heavy gauge weatherproof casing designed for outdoor application. Casing or protective guard shall protect condenser coil return bends and fins from damage. The entire refrigerant circuit shall be pressure tested, dehydrated, and shipped with holding charge as indicated on the schedule on the mechanical drawings. Unit shall have phase failure protection relay and shall be approved for use as applied.

2.1.3 COMPRESSORS: Compressors shall be hermetic, designed for air cooled operation; unloaded start, immersion type crankcase heater, and hermetic motor with protective thermostat located in the stator windings. Compressor shall be mounted on vibration isolators and enclosed in a sound-attenuating compartment. Compressor shall have non-prorated 5-year warranty.

2.1.4 CONDENSER FANS: Fans shall have ball bearings; weatherproof ball bearing, heavy duty motor; and built-in thermal overload protection.

2.1.5 Condenser Coils: Copper tubes with aluminum fins.

2.1.6 Controls: Controls shall be factory mounted and wired in unit, including terminal strip, compressor, and condenser fan contactors; compressor overload protection on all phases; high pressure cutout; separate low-pressure cutout; oil pressure switch; non-recycling interlock; lockout relay for remote reset of safety controls; contactors phase failure relay; built-in stop to restart timer. Unit shall have one power source terminal block connection, with all power wiring, fusing and controls factory installed beyond connection point. An automatic defrost control shall be included to accomplish defrosting (only if coil saturated suction temperature indicates freezing temperatures) every 90 minutes for a period of not more than 10 minutes.

2.1.7 Acceptable Head Pressure Control Methods: Dampers operated from head pressure; flooded coil operated from head pressure; condenser fans controlled from head pressure with "last" fan motor variable speed.

2.2 INDOOR UNIT:

2.2.1 General: Packaged draw-thru (horizontal) type unit complete with all appurtenances. Casing shall be painted cold rolled steel, braced with the unit structural frame and additional structural members. All components except the drain pan shall be internally insulated with aluminum foil faced 1-inch thick, fiberglass insulation, adhered with waterproof adhesive, 100% coverage. Unit arrangement shall be as shown.

2.2.2 Fan Section: Fan shall operate at stable point on curve. Fan section shall have DWDI centrifugal type fans, forward curved. Fans shall be low pressure, statically and dynamically tested and balanced at rated speed after installation in the factory assembled unit. Fan motor shall be quiet operating and mounted on an adjustable base interior of the unit casing. Fan drive shall be variable speed, direct drive with integrated controls and motor to achieve command of both temperature and humidity in cooling and heating modes.

2.2.3 Drain Pan: Condensate drain pans shall be watertight plenum rated plastic, pitches for flow to drain connection. Pan shall be insulated with ½-inch thick minimum closed cell rigid foamed insulation secured with waterproof adhesive, foamed in place or 1-inch rigid board with two coats of Spray-Cor.

2.2.4 Direct Expansion Coils: Seamless copper tubes and aluminum fins. Coil shall be furnished with distributor(s).

2.2.5 Filter: Horizontal air flow filter box with 1-inch-thick fiberglass media contained in rigid frame with supporting maze across entering and leaving faces of media.

2.2.6 Electric Heater: Heating coil shall have a separate chassis and shall contain an open coil resistance type-heating element with automatic high temperature cutout.

2.2.7 Capacities: Capacities shall not be less than scheduled when matched together; 15°F minimum SST, 95°F ODT.

3. FANS

3.1 Performance Ratings: Based upon tests conducted in accordance with AMCA Standard.

3.2 Motors and Drives: Fans shall be direct drive, unless otherwise noted, with drives selected at 1.5 x motor HP and with standard open motors. Provide second adjustable motor sheave during balancing to place belt in mid-position at scheduled operating CFM. Single-phase motors shall be capacitor start with resilient base. After balancing, sheaves shall be in mid-80% of adjustment.

3.3 Unit Disconnects: Provide a unit mounted, U.L. disconnect switches for all fans unless noted otherwise.

3.4 Tests: Wheels shall be statically balanced before assembly and the assembled fans shall be dynamically balanced at the speeds at which they are scheduled to operate.

3.5 Finish: All non-corrosion resistant ferrous metal fan parts shall be cleaned and painted with a heavy coat of primer finish.

3.6 Cabinet Fans (CAB):

3.6.1 General: Direct drive centrifugal type with internal acoustical insulation in formed metal cabinet, gravity discharge shutter and disconnect. Duct mounted fans shall have inlet and outlet duct connections and removable panel for service. Provide factory mounted multi-speed control.

3.6.2 Manufacturers: Cook ‘Gemini’, Greenheck ‘SP’, Penn ‘Z’.

3.7 Capacities: Refer to schedule: Fans shall deliver indicated air quantity at system static pressure.

-- END OF SECTION --

SECTION 15500 - PLUMBING FIXTURES & EQUIPMENT

1. PLUMBING FIXTURES

1.1 General: All fixtures shall be Grade A. The name or trademark of the manufacturer shall be printed or pressed on all water closets, electric water cooler, sinks, urinals, and lavatories. A label which cannot be removed without destroying the fixture, containing the manufacturer's name or trademark and the quality or class of the fixtures, shall be affixed to all fixtures. All enamel shall be acid resistant.

1.2 Installation:

Grout: Space between wall and back of all wall hung lavatories, electric water cooler, urinals, water closets and floor mounted mop receptor shall be grouted with white silicone latex tile grout. Joints shall be finished smooth and flush.

Fasteners: Wall hung lavatories, urinals and electric water cooler equipped with bolting lugs shall be secured to walls with toggle bolts through these lugs in addition to other supporting means.

On all disabled lavatories and sinks, faucet for fixture shall be actuated by rotating Hot and Cold water handles toward user.

1.3 Insulation - Fixture for Disabled:

General: All exposed piping under lavatories or sinks for disabled persons shall be insulated. Where multiple lavatories are mounted in a counter, all exposed piping under all lavatories using hot water shall be insulated.

Material: Fully molded, flexible vinyl insulation, nominal wall thickness 3/16" thick, light gray color which can be painted with automotive trim paint, self-extinguishing meeting ASTM D635 and have a K-value of 1.17. Fasteners shall be nylon type.

Manufacturer: Truebro Model 102 or Trap Wrap 500R or approved equivalent.

2. FIXTURE SCHEDULE

Refer to schedule on Plumbing Drawings.

3. FIXTURE SUPPLIES (METAL-TO-METAL)

3.1 General: All sinks 1/2" or 3/8" supply stops shall have stops with metal-to-metal seats and loose key handles.

4. FIXTURE TRAPS

4.1 General: All sinks, lavatories, and electric water coolers: Traps shall be chrome plated, 17-gauge, adjustable, semi-cast brass with brass nuts, cast set-screw escutcheons, and integral cleanout.

5. CLEANOUTS

5.1 General: Provide cleanouts where shown on plans as follows:

Location	Finish	J. R. Smith	Jones	Josam	Wade	Zurn
Floor Slab (6) (7)	NB	4025	61010	56000	W-6010	ZN-1400-IC
Walls (8)	SS	4472	63000	58890	W-847OR-75	Z-1470-1 w/Z-1469
Outside	C.I.	4280	60000	58190	W-8530-G	ZN-1402-NH

Legend: NB - Nickel Bronze
SS - Stainless Steel
CI - Cast Iron

Notes:

(1) Provide wrench for each type of cleanout.
(2) After installation of cleanouts, remove plug, grease threads, and replace.
(3) Cleanouts in exterior piping shall be brought up to grade as detailed and have recessed cleanout plug.
(4) All cleanouts shall be accessible.
(5) See Plans for sizes.
(6) Standard cleanout denoted as 3" or 4" C.O.
(7) All floor type cleanouts, unless otherwise noted, shall be flush with finished floor.
(8) Cleanout shall be installed in sanitary T-branch, tapped.

6. DRAINS

6.1 General:

Cast iron bodies and flashing collar.

Provide flashing clamp on drains installed in floors with waterproof membrane.

Refer to fixture schedule.

Provide with floor drain trap primer connection.

7. TRAP PRIMERS

Single Primer: Cast brass unit with satin finish chrome plated and built-in air gap/backflow preventer, 1/2" inlet and 1/2" outlets. Provide exposed in cold supply line under lavatory. J. R. Smith 2699-1, Josam 88250, Wade W-2400-CS, Zurn Z-1022.

8. EQUIPMENT

8.1 Instantaneous Electric Water Heater: as scheduled on Plumbing Drawings.

-- END OF SECTION --

SECTION 15600 - PIPING SYSTEM AND PIPING SPECIALITIES

1. GENERAL REQUIREMENTS

1.1 Identification: ASTM No. and Schedule shall be stamped on each length of pipe. Bundles shall have metal tag attached showing ASTM No. and Schedule.

1.2 Steel Pipe Nipples: All thread nipples are prohibited. Nipples 1 1/2-inch and smaller in diameter and attached to larger pipes shall be schedule 80 and shall be attached with the use of threadolets or weldolets.

1.3 Weld Elbows in Steel Piping: Long radius, unless otherwise noted.

1.4 Mitered Fittings and Tapped Pipes: Mitered fittings and tapped pipes are not allowed.

1.5 Weldolets and Threadolets in Steel Piping: Weldolets and threadolets may be used for side outlet reducing tees if more than two pipe sizes smaller than main. Bonney Forge or Allied type 1 branchlet.

1.6 Unions: Provide in piping to all equipment and specialties to permit removal for service. Union shall be metal seat type.

1.7 Reducers: Reducers in steel piping shall be eccentric type where grading is specified. Reducers shall be used to change pipe sizes.

1.8 Dissimilar Metals: Dissimilar metals, copper, and steel, shall not be installed to allow direct contact between the metals. Provide dielectric nipples as specified herein.

1.9 Relief Valves or Devices Discharge Piping: End of pipe or fittings from relief valves or devices shall not be threaded.

2. PIPE & FITTINGS

2.1 Exceptions: Pipe, fittings and grades shall be as listed below unless otherwise noted.

2.2 Soil, Waste and Vent:

2.2.1 Pipe: Schedule 40, Poly-vinyl Chloride (PVC), ASTM D 1785-76, with solvent weld joints.

2.2.2 Fittings: Same material as piping.

2.2.3 Grades: Horizontal drainage piping of 3-inch diameter and less shall be installed with fall of not less than 1/4-inch per foot. Drainage piping larger than 3-inch diameter shall be installed with fall of not less than 1/8-inch per foot, unless otherwise noted.

2.2.4 Protection: Before, during, and after installation, pipe and fittings shall be protected from exposure to sunlight and damage or deterioration to the material. Solvents, solvent compounds, lubricants, elastomeric gaskets, and materials used to install the pipe shall be stored in accordance with the manufacturer's printed recommendation and shall be discarded if the storage period exceeds the recommended shelf life. Solvents in use will be discarded when the recommended pot life is exceeded.

2.3 Domestic Hot and Cold Water: Unless otherwise noted.

2.3.1 Pipe:

Above Ground: Hard drawn type "L" copper tubing.

Below Concrete Slab: Soft temper type "L" copper tubing with no joints or fittings below the floor slab.

2.3.2 Fittings:

Copper Tubing: Sweat type wrought copper. Reducers shall be used to reduce pipe size.

2.4 Refrigerant Piping:

2.4.1 General: Refrigerant pipe sizes are for estimating purposes only. Size and install as per manufacturer's recommendations.

2.4.2 Pipe: Hard drawn ACR copper tubing.

2.4.3 Fittings: Brazed type, wrought copper. Ells shall be long radius.

2.4.4 Provide clearances for double suction riser traps.

2.4.5 Grade: Horizontal pipes in direction of flow with traps as shown and at condensing unit.

2.5 Condensate Drain:

2.5.1 Pipe and Fittings: Type I, Schedule 40 Polyvinyl Chloride with PVC solvent weld type fittings.

2.5.2 Grade: Horizontal pipe 1/8-inch per foot minimum down in direction of flow.

2.5.3 Location: Provide full size drain with 2-inch minimum water seal trap from all condensate drain pans to nearest floor drain, unless otherwise shown.

2.6 Pipes Under Slab and Underground: Where noted, pipes under slab and underground shall be installed in Type 'A' light wall PVC conduit and fittings.

3. PIPE INSTALLATION

3.1 General: Remove burrs and all loose material from interior and exterior of all piping prior to assembly.

3.2 Refrigerant Pipe Installation: Pipe shall be cleaned, after removing burrs, by drawing a lint-free rag through it. Dry nitrogen shall be continuously bled through system during brazing to prevent oxidation.

3.3 Piping in Exterior Walls: Pipe routed in exterior walls shall be installed on building side of wall insulation. Where interior construction is block, cut outside face of block and route pipe in depth of cavity and outside block wall thickness. Do not interrupt board type cavity wall insulation or vapor barrier.

3.4 Valves: Unless otherwise noted or prohibited by space limitations, mount all valves in piping 8-inches or more above floor with spindles horizontal and in a direction to minimize obstruction of service aisles.

3.5 Coring: Core drill all openings in slabs and masonry walls where sleeves are not installed as wall is constructed, and in all exposed masonry walls except where exposure is on mechanical room side only.

3.6 Pipe Routing: Pipes shall be run level, plumb, and parallel with building structure, unless otherwise noted.

3.7 Pipe Spacing: Maintain 4-inch minimum clearance between pipe and fittings after insulating, space permitting, unless otherwise noted.

4. PIPE JOINTS

4.1 General: Joints shall be as determined by the equipment, valve or fitting specified.

4.2 Threaded: All threads shall be American Standard pipe thread. Ream cut ends and remove all burrs. Apply teflon thread sealing compound to male threads only on all piping.

4.3 Solvent Welds: Conform to piping manufacturers solvent weld instructions. Clean pipe and fitting before applying solvent. Materials must be maintained between 50° and 90° F during assembly.

4.4 Welded: Welding procedures and welders' qualifications shall be in accordance with ASA B31.1 Code for Pressure Piping, dated 1983. Provide copy of certificate of qualification for all welders to be used prior to performing any welding.

1 1/2-inch and Smaller: Gas weld with oxygen and acetylene.

2-inch and Larger: Metallic arc weld.

4.5 Flanges: Raised face 150-pound forged steel slip on flanges with carbon steel bolts full size of bolt holes and hex nuts. Install in horizontal pipe centerlines with bolts straddling vertical and horizontal pipe centerlines. Install flanges in vertical lines with bolt holes straddling lines parallel to equipment centerlines and building lines. Flanges for connection to plastic pipe, flat face equipment flanges shall be same as

above except full-faced with full-faced 1/8-inch gaskets of 60 shore hardness, rated for 250°F, and 150-pound sealing pressure. Bore of flanges shall be same as pipe bore.

4.6 Soldered:

4.6.1 Type K, L & M, Unless Otherwise Noted:

Solder shall meet all Federal requirements for lead-free solders as mandated by the Federal Safe Drinking Act Amendments of 1986 (Public Law 99-339); and shall be listed and/or evaluated for potable water systems by NSF, BOCA and IAPMO.

Manufacturers: J. W. Harris (Stay-Safe Bridgit); Willard Industries, Inc. (Plum Safe) or Taracorp Industries (Taramet Sterling).

4.6.2 Type "L" ACR Refrigerant and Buried Type "L" Copper Piping: Brazed (silver solder). Joints shall be with silver-bearing alloy brazing rod having a melting point in excess of 1000°F. Utilize 95/5 solder within fan coil and cabinet heater enclosures.

5. EXCAVATION & BACKFILL

5.1 General: See EARTHWORK.

5.2 Excavation: Trenches shall be excavated to the line and grade determined by pipes. Do not undercut trench. The bottoms of all trenches in rock or hard strata, cinders organic soils or injurious materials shall be excavated a minimum of 6 inches below the bottom of the pipeline and refilled with 6 inches or more inorganic soil, sand, or gravel, tamped in place.

5.3 Dewatering: Contractor shall furnish all labor, materials, and equipment to keep the work free of water either from surface sources or from underground sources or from both. The selection of the equipment and method of the removal of the water shall be the responsibility of the Contractor. The Contractor shall be and is responsible for all damage incurred in handling water conditions. The present provision supersedes and replaces all other provisions relating to the removal of water from the site.

5.4 Backfill: All junk metal, timbers, bricks, rocks, and material not conforming to specification for FILL shall be removed from site before backfilling. After pipelines have been tested, inspected, and approved, the trenches shall be backfilled to the first twelve inches of backfill over pipe in 4-inch layers and hand tamped. The remainder of backfill may be machine tamped. Backfill shall be compacted and tested as specified in Earthwork except that the number of tests shall be 1 for each 50 ft. of trench for each 2 ft. of fill, in locations as directed by Architect. On narrow trenches where compaction would be difficult to obtain, the contractor may install fill, tamped to remove all voids, and pour a 4-inch-thick concrete slab spanning trench and bearing 6 inches minimum on each side on firm compacted soil. The top of slab shall be located at bottom of paving base.

5.5 Coverage: The minimum coverage on all pipe outside building shall be 3 feet to final grade, unless otherwise noted.

6. VALVES

6.1 General:

Valves shall be installed in supplies to all equipment. Provide balance valves in returns from all heat transfer equipment, unless otherwise indicated.

Valves installed underground shall have extension to underneath bottom of valve box cover and square operating nut.

All domestic water valves with hose end connections shall be provided with non-removable vacuum breaker.

6.2 Types:

6.2.1 Type C - Check Valves:

2 1/2-inch and Smaller: Bronze body, horizontal swing type, regrinding, 125 SWP, 200 WOG, solder ends. Crane 1342, Grinnell 3300SJ, Milwaukee 1509, Nibco S413, Stockham B309, American 31FS, Kitz 23.

3-inch and Larger: Iron body, bronze trim, swing type, 125 SWP, 200 WOG, flanged ends. Crane 373, Grinnell 6300A, Milwaukee F-2974-M, Nibco F918-B, Stockham G931, American 35, Kitz 78.

6.2.2 Type D - Ball Valves:

2 1/2-inch and Smaller: Bronze body, bronze ball, teflon seats and seals, full port opening, 150 SWP, 400 WOG, solder ends. Consolidated 82-200, Crane 9303, Grinnell 3810SJ, Milwaukee BA-301, Nibco S595, Watts B-6801.

6.2.3 Type E - Sillcocks:

Bronze body, angle pattern, lock-shield, metal handle, hose connection, bronze seat, Buna N disc. Nibco 763, Woodford 24P or Hammond No. 1000. Install 16 to 20 inches above grade unless otherwise noted.

6.2.4 Type I - Ball Valves:

2-inch and Smaller: Bronze body, bronze ball, three-piece, full port, teflon seats, 150 SWP, 400 WOG. Consolidated 82-100, Crane 2330, Grinnell 3810, Milwaukee BA-300, Nibco T595, Watts B-6800.

3-inch and Larger: Carbon steel body, stainless steel ball and trim, full flow, teflon seats, flanged ends, 275 WOG. Rockwood 1154T; Clayton Mark & Co., Petro 770 Series; and Pacific Valve Co, Fig. #225 & Flanged 400.

6.2.5 Type O - 3/4" Interior Hose Bibbs:

Brass body, polished chrome exterior finish, wall flange, lockshield; loose key and vacuum breaker. Install 18 inches above floor unless otherwise noted. Manufacturers: Woodford model 24P; Nibco 763VB-LS or Arrowhead Brass Co.

6.3 Use: (Valve types shall be as shown on drawings)

Domestic Water, Unless Otherwise Noted: Type C, D, E, O.

Balance Valves: Domestic Water-Type D; Other-Type D & I (1 1/2-inch and smaller)

7. PIPING SPECIALTIES

7.1 Flashings:

7.1.1 Plastic Pipe Vents Thru Roof: Neoprene flashing collar.

7.1.2 Workmanship: Flashing materials shall be free of holes and splits, and all joints and seams shall be sealed watertight with solder.

7.2 Floor and Ceiling Plates:

7.2.1 Chromium plated with concealed hinge and catch. Provide where insulated and un-insulated pipes exposed to view pass through floors, walls, ceilings, and cabinets in finished areas. Plates shall be heavy pattern with tension spring. Sizes: 3/8"-8" for iron pipe sizes; 3/8"-4" for copper tube sizes.

7.3 Relief Valves:

7.3.1 ASME approved in accordance with Unfired Pressure Vessel Code, Section 8, UG-136, Safety and Relief Valves and Low-Pressure Heating Boilers, Section 4, Relief Valves. Provide pressure/ temperature relief valve on domestic water systems.

7.3.2 Relief Valve Discharge:

7.3.2.1 Discharge: Pipe discharge of each valve individually to termination, unless otherwise noted.

7.3.2.2 Size: Full size of valve unless indicated larger.

7.4 Dielectric Nipple:

Use where ferrous and non-ferrous pipes join. Dielectric shall be comprised of a steel nipple with a 2-inch-long thermoplastic liner for dielectric separation rated for 300 psig at 225 ° F as manufactured by Flow Design in Model DN or approved equivalent.

7.5 Shock Absorbers:

7.5.1 Pre-pressurized tank with two chambers separated by a permanent flexible barrier. The upper chamber shall contain air or inert gas of a pre-determined charge to prevent water hammer according to a sizing table. The lower chamber surfaces shall be of a non-corrosive material. Absorber must be A.S.S.E. Standard 1010 approved, ANSI A112.26.1M approved and PDI Standard WH-201 approved and certified.

7.5.2 Manufacturers: American Tube Diatrol, Josam Absorbotron, Wade Shokstop, Sioux-Chief Hydra-Rester, or Watts Series 15.

7.6 Backflow Preventer

7.6.1 General: A backflow preventer shall be provided in the potable water supply to the building in accordance with codes and utility regulations. All domestic water connections to mechanical equipment or non-potable water usage shall be provided with a backflow preventer unless a backflow preventer is built into the equipment.

7.6.2 Reduced pressure type with bronze strainer, air gap and isolation ball valves for pipe sizes ¾" – 2". Watts series No. 009, Febco series No. 825Y, Hersey series No. FRP-II, Wilkins series 575AS, Conbraco series 40-200.

7.6.3 Reduced pressure type with isolation ball valves with resilient seat isolation for piping sizes 2 ½" – 10". Watts No. 909, Beeco No. 6CM, Hersey No. 825, Wilkins 575A 2 ½'6 inch, 575AN 6-10 inch.

7.6.4 Drain: Vent/relief shall be discharged via fixed air gap or funnel. Pipe discharge to floor drain.

7.7 Vacuum Breakers For Hose End Connections (Interior Only):

7.7.1 Chrome plated for plated devices, rough brass elsewhere. Watts 8A, Nidel 34-H, T & S B-972, Wilkins BFB-8, Conbraco 38-304-CS.

7.8 Vacuum Breakers for Hose End Connections (Exterior Only):

7.8.1 Chrome plated for plated devices, rough brass elsewhere. Nidel 34-HD, Watts NF-8 or Conbraco 38-404-03.

7.9 Trap Primers:

7.9.1 Single Primer: Cast brass unit with built-in air gap/backflow preventer, 1/2" inlet and 1/2" outlets. Provide in cold supply at lavatories. J. R. Smith 2699-1, Josam 88250, Wade W-2400-CS, Zurn Z-1022.

-- END OF SECTION –

SECTION 15700 – INSULATION

1. REQUIREMENTS

Insulation thickness specified are minimum. Exterior of visible duct and pipe insulation shall be uniform in appearance. All insulation, adhesives, materials, jackets, and sealers shall have a flame spread of 25 or less and smoke development of 50 or less (exception allowed for canvas jacket and PVC fitting covers except in return air plenums) as tested by ASTM E-84-80. All insulation, mastics, coatings, sealants, and adhesives shall be certified by the manufacturer to be asbestos-free. Unless otherwise noted, insulation shall be continuous thru sleeves.

2. CODES

Duct insulation materials and adhesives shall conform to NFPA 90A.

Refer to Section 15010 Codes and Ordinances.

3. DUCT INSULATION

3.1 Materials:

3.1.1 Blanket Type: Glass fiber duct insulation, 3/4-pound density with FSK facing. Install mechanical fasteners not more than 18-inches on centers on bottom of ducts over 24-inches wide, seal punctures with FSK tape. Lap transverse joints 2 inches minimum and secure with staples 18" on centers. Seal all joint and vapor barrier penetrations with FSK tape. Wrap insulation with 18-gauge stainless steel wire 18-inches maximum on centers. Do not pull insulation tight around ducts when wrapping. Use 24-inch minimum length 6# density board type insulation on bottom of ducts at trapeze hangers.

3.1.2 Board Type: Glass fiber rigid duct insulation board, 6-pound density with FSK facing. Cut to fit between standing seams and stiffeners to provide 1/2-inch minimum cover, and secure to ducts with 100% coverage of duct insulation adhesive and mechanical fasteners on 12-inch centers. Butt joints. Tape all joints and pin penetrations with 4-inch wide FSK tape after pointing up clip penetrations with insulating cement.

3.1.3 Foamed Plastic: Flexible foamed plastic sheet insulation, 6-pound density, having a thermal conductivity of not more than 0.28 at 75° F. Apply insulation with smooth side out of coating both surfaces to be joined completely with a thin coat of waterproof instant bonding adhesive. Adjacent sheets shall fit under compression. Finish insulation with two coats white vinyl insulation paint after adhesive has dried 12 hours. Allow 2 hours between coats. Insulation shall have flame spread rating of 25 or less when tested in accordance with ASTM E84-80.

3.2 Finish for Insulation Exposed Indoors: Secure metal corner beads to all exterior edges and cover insulation and beads with glass cloth adhered with fire-resistant adhesive and finished with a white breather coating. Taper insulation to test openings and leave brass plugs exposed.

3.3 Location and Thickness:

A. Supply Ducts: Blanket; 2-inch thick.

B. Ceiling Supply Diffusers: Insulate tops and sides of all ceiling supply diffusers. Thickness same as supply duct.

C. Return Ducts: Do not insulate if internally lined, otherwise insulate with 1-inch blanket.

D. Exhaust Ducts: Do not insulate.

E. All Ductwork Exposed in Mechanical Rooms: 2-inch board insulation.

F. Insulation At Rated Partitions: Refer to duct openings in AIR DISTRIBUTION section. Seal joint between sealant and duct insulation using FSK tape, leaving 3/8-inch of sealant exposed for observation of sealant.

4. PIPE INSULATION

4.1 General:

U.L. Rating: Glass fiber pipe and fitting insulation materials adhesive, jackets and accessories shall be Underwriters Laboratories rated to provide a U.L. rated, non-combustible pipe insulation system.

Fixture Supply Piping Exposed and In Cabinets: Do not insulate. Insulate exposed drain and hot water supply for all handicapped accessible lavatories.

Domestic Hot & Cold Water, and Condensate Drain Piping: Insulate all fittings including valve bonnets. Leave only valve stems, open ends of wells, and gauge cocks exposed.

All Other Piping: Omit insulation on unions and valves. Taper insulation ends and cover with jacket material.

Domestic Cold-Water Piping In Plumbing Chases and Concealed In Non-exterior Walls: Do not insulate.

Insulation At Hangers: Hangers for horizontal, refrigerant suction, supports shall be outside insulation with saddles as specified herein.

Insulation thru Rated Partitions: Install U.L. classified sealant as specified in section, BASES, SUPPORTS and SLEEVES, within sleeve as required by sealant manufacturer to maintain wall rating. Allow sealant to protrude 3/8-inch from sleeve for observation of sealant.

4.2 Materials:

4.2.1 Glass Fiber: Molded, sectional 4-pound minimum density glass fiber pipe insulation with ASJ self-sealing lap jacketing. Run pipe covering over fittings in concealed areas. Insulate fittings in exposed areas with pipe insulation mitered to fit and finished smooth to thickness of adjacent insulation with insulating cement. Molded fittings shall be furnished in exposed areas. On piping other than chilled water, provide fiberglass inserts with PVC fitting covers except in return air plenums. Seal butt ends of fittings and sections on chilled water pipe with white vapor barrier coating. PVC fitting covers are not acceptable.

4.2.2 Urethane: Mold sectional rigid foam insulation rated -250° F to +220° F, maximum conductivity 0.16 at 75° F, 1.8-pound minimum density with factory applied jacket. Insulate fittings with pipe insulation cut to fit and finished smooth to thickness of adjacent insulation. Seal all longitudinal and circumferential joints with lap strip of jacket adhered with white vapor barrier adhesive.

4.2.3 Silicate: Molded sectional rigid pipe insulation rated up to 1200° F, maximum conductivity of 0.55 at 500° F, 11-pound minimum density, with factory applied jacket. Material shall be asbestos-free Hydrous Calcium or expanded perlite with binder. Insulate fittings with pipe insulation mitered to fit, finished smooth to thickness of adjacent insulation with insulating cement.

4.2.4 Foamed Glass: Molded rigid cellular glass insulation. Coat bore and ends of insulation and seal all joints with asphalt cut-back mastic. Secure insulation in place with 18-gauge stainless steel wire on 9-inch centers. Install insulation with tightly butted staggered joints. Coat insulation with white vapor barrier coating reinforced with glass cloth.

4.2.5 Flexible Foamed Plastic: Closed cell 5-pound minimum density foamed plastic flexible insulation having a thermal conductivity of not more than 0.26 at 75° F. Seal joints with insulation adhesive. Install insulation under compression during pipe fabrication without splitting. Do not split insulation longitudinally except at tees and expansion bulbs. Insulation shall have flame spread rating of 25 or less and smoke developed rating of 50 or less when tested in accordance with ASTM E84-80.

4.2.6 Insulation Where Supports Are Outside Insulation: Rigid insulation.

4.3 Finish:

4.3.1 Concealed: Factory applied white kraft and foil laminate, reinforced, fire retardant jacket (ASJ) with self-sealing lap and butt strips. Seal longitudinal lap and transverse joints with vapor barrier adhesive and apply 3-inch-wide joint sealer strips in adhesive at traverse joints. Fittings shall be covered with PVC fitting covers and vapor sealed on cold pipes. Staple laps with outward clinching staples 18-inches on centers and at each fitting, outlet, or end. Seal punctures with vapor barrier.

4.3.2 Exposed Indoors: Factory applied white kraft and foil laminate, reinforced, fire retardant jacket (ASJ) with self-sealing lap and butt strips. Seal longitudinal lap and transverse joints with vapor barrier adhesive and apply 3-inch-wide joint sealer strips in adhesive at transverse joints. Staple laps with outward clinching staples 18-inches on centers and at each fitting, outlet, or end. Seal punctures with vapor barrier adhesive.

4.3.3 Exposed Outdoors: Apply a 16-mil aluminum jacket with a 2-inch overlap at longitudinal and transverse joints, secured in place with 3/4-inch by .015-inch aluminum bands on 18-inch centers. Jacket shall be outside of jacket for "concealed" insulation. Finish with gray breather mastic and glass cloth on fittings.

4.3.4 Foamed Plastic Indoors or Outdoors: No jacket. Paint exposed insulation with two coats white vinyl insulation paint after adhesive has dried 12 hours. Allow two hours between coats.

4.4 Type and Thickness:

4.4.1 Domestic Water: Glass fiber.

Hot Water: 1-inch thick.

Cold Water: Exposed, 1-inch thick; concealed, 1/2-inch thick. Do not insulate buried piping.

4.4.2 Refrigerant Suction: ¾-inch foamed plastic.

4.4.3 Domestic Hot and Cold-Water Piping and Waste Piping Under Lavatories or Sinks for the Disabled: Refer to Section 15500, PLUMBING FIXTURES & EQUIPMENT.

4.4.4 Condensate Drain Piping: Foamed plastic; 1/2-inch thick.

4.4.5 Insulation at Saddles and Supports: Rigid insulation of length to extend 1-inch minimum beyond each end of support or saddle. Use foamed glass or urethane insulation on chilled water refrigerant suction and condensate drains and silicate on all other, of thickness to match adjacent insulation. Composite insulation-shield units manufactured by Pipe Shields, Inc. are acceptable as equal to insulation and saddles specified herein.

4.4.6 Urethane Insulation: Where foamed glass is specified, urethane may be substituted. Urethane shall have "R" equal to or greater than foamed glass, 1-inch minimum thickness.

5. SADDLES

5.1 Provide galvanized steel saddles at each point where pipe insulation passes through a hanger or rests on a support. Saddles shall be 180° arc for horizontal piping, 360° arch for vertical piping. Length and gauge of saddle shall be as follows:

Length of Saddle		Insulation Thickness of:		
Pipe Size	Saddle Gauge	1/2"	1"	1 1/2"
1" & Smaller	18	6"	6"	--
1 1/4" – 2"	18	8"	6"	6"
3"	18	12"	10"	8"
4"	16	16"	12"	12"

6. INSTALLATION

General: All insulation shall be installed in accordance with the insulation manufacturer's instructions unless prohibited herein.

7. COATINGS AND ADHESIVE MANUFACTURERS

Insul-Coustic; Lion Oil; Foster; Armstrong; Childer.

8. STAPLES, BANDS, WIRES, WIRE NETTING, CORNER BEADS, AND CORNER ANGLES

Staples shall be outward clinching type of type 304 or 316 stainless steel, or monel.

Bands shall be galvanized steel, aluminum, brass, or nickel copper alloy, of 3/4-inch nominal width. The band thickness exclusive of coating shall be not less than 0.005-inch for steel and nickel copper alloy, 0.007-inch for aluminum, and 0.01-inch for brass.

Wire shall be 18-gauge stainless steel.

Wire netting provided for exposed surfaces of insulation to be cement finished, shall be 22-gauge, 1-inch galvanized mesh, with continuous 26-gauge galvanized steel corner beads having 2 1/2-inch wings.

Corner angles on insulation of ducts and equipment exposed in finished spaces shall be formed of 28-gauge, 1-inch by 1-inch aluminum adhered to 2-inch by 2-inch heavy kraft paper to protect external corners under field applied jackets or facings.

9. ADHESIVES, COATINGS, SEALING COMPOUNDS AND PROTECTIVE FINISHES

Lagging Adhesive and Coating for Glass Cloth Jackets and Other Facings - MIL-A-3316 B, Class 1.

Lap Adhesive for Vapor Barrier Jacket - MIL-A-3316 B, Class 2.

Bonding Adhesives - For securing insulation to metal surfaces - MIL-A-3316 B, Class 2 for temperatures up to 200° F.

Contact Type Adhesive - For installing flexible unicellular insulation - MIL-A-24179A, Type II, Class 1.

Bedding Compound and Joint Sealers - MIL-B-19564A.

Coating Compound - Vapor Barrier Treatment - MIL-C-19565B, Type I or II.

Protective Finish Outside of Buildings - Coating Compound MIL-C-19565 B, Type I.

10. INSULATION MANUFACTURERS

Armstrong; BFG; Certainteed; Johns Manville, Owens Corning; Pittsburg Corning; Rubatex; Knauf.

-- END OF SECTION --

SECTION 15800 - BALANCING & OPERATIONAL TESTS

1. REVIEW

The sub-contractor performing the services under this Section shall review the Contract Documents for appurtenances and arrangement for specified balancing prior to the installation of any equipment and material. The Contractor shall notify the Engineer of any omissions noted within 30 days of the Contractor's notice to proceed. The sub-contractor performing the services under this section shall be a separate independent firm with no relationship with the mechanical sub-contractor or the controls sub-contractor.

2. INSTRUMENTS

Instruments for which calibration is periodically required and which will be utilized for balancing air and water systems must have been calibrated within a period of six months prior to balancing. Types and dates of calibration of all instruments shall be listed in the final air and water balance reports.

3. ADJUSTING OUTSIDE AIR QUANTITIES

Outside air quantities shall be established, as a percentage of total supply air, from measurements of return, outside and mixed air, using a 12-inch-long glass thermometer with 1/2° F divisions. Outside quantity shall be made after complete adjustment of supply air quantity and with a 15° F minimum temperature differential between outside and return air temperatures.

The following formula shall be utilized for calculating percentage outside air:

$$\text{OSA equals } \frac{Tm - Tr}{To - Tr}$$

Tm = Mixed air temperature.
Tr = Return air temperature.
To = Outside air temperature.

4. CONNECTING EQUIPMENT

Where two elements of a system, e.g., condensing unit and coil, are connected, the testing of equipment shall be simultaneous.

5. BALANCING

System shall be initially balanced for air and water quantities shown. Final balancing shall be under seasonal operating conditions by adjusting for equal temperature in all spaces. This shall be done at outside temperatures above 85° F and below 50° F for cooling and heating, respectively.

6. AIR BALANCE PERFORMANCE REQUIREMENTS

6.1 Measurements: Air quantity measurements in main and branch ducts shall be made by pitot tube traverse of the entire cross-sectional area of the duct. Ducts having velocities of 1000 or more feet per minute shall be measured with inclined manometers, draft gage, or magnehelic gages; ducts having velocities of less than 1000 feet per minute shall be measured with micromanometers, hook gages, or Alnor velometers.

6.2 Duct Openings: Openings in ducts for pitot tube and thermometer insertion shall be sealed with snap-in plugs after air balance is complete.

6.3 Outlet and Inlet Air Quantities: Determine by direct reading velocity meters in accordance with outlet and inlet manufacturer's recommendation.

6.4 Adjustments: Total air quantities shall be obtained by adjustment of fan speeds. Branch duct air quantities shall be adjusted by volume dampers. Dampers shall be permanently marked after air balance is complete so that they can be restored to their correct position if disturbed at any time. Final air quantities shall be within plus or minus 5% of those called for on the drawings.

7. CERTIFIED BALANCE REPORTS

7.1 Three copies of the initial balance report shall be submitted prior to contractor's request for substantial completion inspection. Report shall be entitled initial "Balance Report". This report shall include the data listed below for each system, required and actual. Where data cannot be furnished during initial balance due to season, temperature, or other conditions, complete data for that system shall be provided under seasonal balance.

7.2 Air Balance Data - Air Handling Equipment:

7.2.1 Air Handling Units, Fans:

Unit designation.
Size and manufacturer.
Motor H.P., volts, phase, cycles, full load amps.
Drive pulley P.D. or O.D.
Driven pulley P.D. or O.D.
Belts #, type & length.
Shaft size (motor & fan).

7.2.2 Test Results: Record readings with fan adjusted for design CFM.

Total C.F.M.
Static pressure, total, inlet, outlet, and components, i.e., coil, filter.
Motors, amps, and voltage. (All legs.)
Outside Air, CFM.
Fan RPM.
Fan B.H.P.
Coil air inlet and outlet dry and wet bulb temperatures.
Return and outside air dry and wet bulb temperatures.
Coil refrigerant suction pressure.

7.3 Air Distribution System:

7.3.1 Individual Outlets and Inlets:

Outlet and inlet identification, location, and room designation.
Design and resultant test quantities in C.F.M.
Relative position of balancing damper.

7.4 Air Cooled Heat Pump:

7.4.1 Installed Unit Data:

Unit designation.
Size and manufacturer.
Motor horsepower, volts, phase, cycles, and full load amps.

7.4.2 Test Results:

Suction and discharge pressure.
Motor amps and volts (All legs)
Ambient temperature.

7.5 Filters:

Description of condition.
Pressure drop.

7.6 Smoke Detectors: Verify operation and confirm test.

7.7 All Safety Controls: Verify operation, tabulate list of controls with settings and confirm test.

7.8 All Motors:

Nameplate data.
Operating amps and voltage. (All legs.)
Heater elements rating.

7.9 Controllers: Tabulate settings of all controllers, individually, by location, equipment, or space.

7.10 Sensors: Record temperature at all sensors; equipment, space, duct, and pipe; and settings of controllers.

7.11 Installed Data: Where installed data is specified, complete specified data on piece of equipment shall be included in report.

7.12 Space Temperatures: Temperature of each conditioned space and dry bulb setting of controlling thermostat.

7.13 Gas Fired Unit Heaters:

7.13.1 Unit designation.
Size and manufacturer.
Model Number
Fuel Type
Motor H.P., volts, phase, cycles, full load amps.
CFM output
Leaving Air Temperature LAT
Entering Air Temperature EAT
Heating Output Btu/hr

7.14 Deficiencies: List all deficiencies noted.

8. BALANCE UNDER SEASONAL OPERATING CONDITIONS

8.1 Test: After the initial balance has been completed, reviewed and accepted, the Contractor shall adjust the system under seasonal operating conditions by performing operational tests (over a minimum period of eight hours under both cooling and heating conditions. These tests shall be performed only after each piece of equipment has been individually tested, and is verified to be in correct operating condition, and shall be made at times when outdoor dry bulb temperatures are above 85° F for cooling, or below 50° F for heating. When test is run during the cooling cycle, the building must be occupied, all lights shall be turned on for a minimum of six (6) hours. Doors to all spaces shall be closed and all space thermostats set at 74° F.

8.2 Purpose: Prove correctness of installation; prove functioning of capacity and safety controls; prove calibration of operating controls; and prove stability of operation under actual loading conditions.

8.3 Certified Reports: Three copies of the following balance data shall be submitted within five (5) days of the job visit. Report shall be entitled "Seasonal Operating Conditions Cooling" or "Heating". The following information shall be included in each report:

Temperature of each conditioned space and dry bulb setting of controlling thermostat.

Settings of all controllers, individually, by location, equipment, or space.

Temperature at sensors in equipment, space, duct, and pipe; and settings of controllers.
Complete data on equipment/systems not submitted with initial balance reports.
Date and outdoor DB and WB range at the time indoor temperatures were recorded.

Adjustments performed and corrective action taken.

List of deficiencies noted.

Certification that the purpose of the visit has been complete.

-- END OF SECTION –

SECTION 260500 - BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Basic Electrical Requirements specifically applicable to Division 26 Sections, in addition to Division 1 General Requirements.

1.2 SCOPE

A. This scope covers the furnishing, installation, testing, adjusting and placing in operation all electrical equipment, devices, facilities, materials, and auxiliary items necessary for the complete and successful operation of all electrical equipment as herein described, shown on the plans, or deemed necessary for the completion of the electrical portion of the project. It is the intent of DIVISION 26 to outline the electrical requirements of the contract in order to provide the information necessary for the construction of a fully operational system as shown on the plans and as herein described. A comprehensive electrical scope of work is as follows:

1. Power/Electrical System
2. Generator Systems
3. Lighting System
4. Utility Work
5. Connection of Electrically Powered Mechanical Equipment
6. Temporary Construction Power
7. All Incidentals Necessary for a Complete and Fully Operational Electrical System.

1.3 WORKING CLEARANCES

A. Working clearances around equipment requiring electrical services shall be verified by Contractor to comply with Code requirements. Should there be apparent violations of clearances; the Contractor shall notify the Engineer before proceeding with connection or placing of equipment.

B. In the case of panelboards, safety switches and other equipment requiring wire and cable terminations, the Contractor shall ascertain that lug sizes and wiring gutters, or space allowed for proper accommodation and termination of the wires and cables are adequate.

1.4 WORKMANSHIP

A. Workmanship under this Division shall be accomplished by persons skilled in the performance of the required task. All work shall be done in keeping with conventions

of the trade. Work of this Division shall be closely coordinated with work of other trades to avoid conflict and interference.

1.5 PROTECTION OF ELECTRICAL EQUIPMENT

A. Electrical equipment shall be protected by the weather, especially from water dripping or splashing upon it, always during shipment, storage and after installation. Should any apparatus be subjected to possible injury by water, it shall be thoroughly dried out and put through a dielectric test, at the expense of the contractor, to ascertain the suitability of this apparatus. The results of the test shall be submitted to the Engineer and if the apparatus is found to be unsuitable, the contractor shall replace it without additional cost to the Owner.

1.6 UTILITIES

A. The electrical contractor shall install a fully operational electrical service as described in the plans.

B. Arrange with the utility company for the services and install the services in accordance with their requirements, regulations and recommendations.

1.7 GUARANTEE

A. Contractor shall guarantee all light bulbs. They shall be guaranteed for a period of one (1) year after the building is occupied. Guarantee shall include material and labor for repair.

B. The Contractor shall guarantee all other electrical systems, materials and workmanship to be free from defects for a period of one (1) year from the date of final acceptance. He shall correct all defects arising within this period upon notification by the Owner or Engineer, without additional compensation.

C. It is understood that the rights and benefits given the Owner by the guarantees found in the technical specifications are in addition to and not in derogation of any rights or benefits found in the special and general provisions of the contract.

1.8 TEMPORARY POWER AND LIGHTS DURING CONSTRUCTION

A. It shall always be the responsibility of the Contractor to provide and maintain adequate temporary power and lighting during construction, so that the various other trades can accomplish their work in a flawless manner. Particular attention will be given to power and lighting for masonry, drywall, painting, tile work and any other finish work.

1.9 MATERIAL STANDARDS

A. Material shall be new and comply with standards of Underwriters' Laboratories, Inc., where standards have been established for the particular product and the various NEMA, ANSI, ASTM, IEEE, AEIC, IPCEA or other publications referenced.

1.10 TEST EQUIPMENT

A. The contractor shall provide all test equipment and supplies deemed necessary by the Engineer at no extra cost to the Owner. These supplies shall include but not be limited to the following: volt meters, amp meters, clamp-on ground rod test meter, light meters, generator load banks & temporary cables, watt meters, harmonic distortion test equipment, thermal image camera, megger tester, high pot test equipment, power quality analyzers, recording power meter, and oscilloscopes.

1.11 REFERENCES

A. ANSI/NFPA 70 – National Electrical Code.

B. ANSIC2 – National Electrical Safety Code.

C. NEMA – National Electrical Manufacturer's Assoc.

D. UL – Underwriters Laboratories

E. NFPA – National Fire Protection Assoc.

F. IEEE – The Institute of Electrical and Electronics Engineers

G. IESNA – The Illuminating Engineering Society of North America

H. NETA – International Electrical Testing Association

I. API – American Petroleum Institute

J. AGA – American Gas Association

K. Recommended Standards for Water Works and Wastewater Facilities as published by Great Lakes – Upper Mississippi River Board of State Public Health and Environmental Managers.

1.12 SUBMITTAL

A. Submit under provisions of the General Provisions.
   1. The Contractor installing all Electrical work shall review and approve all electrical shop drawings prior to submittal to the Engineer for review. As part of the review, the installer shall certify the following:
      a. I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is in compliance with the contract drawing and

specifications, can be installed in the allocated space, will be stored in accordance with the manufacturers recommendation, will be installed per NEC, and is submitted for approval.

Certified by: _____ Date: _____

B. Submit shop drawings and product data grouped to include complete submittal of related systems, products, and accessories in a single submittal. No electrical work may be performed until shop drawings are approved. Submit Shop Drawings on the Following Systems as Grouped Below:
   1. Low Voltage Power/Electrical System
      a. Conduit and Conduit Fittings
      b. Wire
      c. Pull Boxes
      d. Panelboards
      e. Panelboard Layouts
      f. Circuit Breakers
      g. Disconnects
      h. Fuses
      i. Conduit Support Systems
      j. Wiring Devices
      k. Surge Protection Equipment
      l. Breaker Coordination Study
   2. Lighting System
      a. All Light Fixtures
         1) Computer Printout of Lighting Layout
         2) Sample Fixture (as directed by Engineer)
         3) IES Photometric Files
      b. Poles & Foundations
   3. Miscellaneous Electrical Equipment
      a. Miscellaneous Electrical Parts
   4. Drawings
      a. Coordination drawing of All Electrical Room
      b. Conduit layout drawings
      c. Duct drawings
      d. As-Built Drawings

C. Mark dimensions and values in units to match those specified.

1.13 REGULATORY REQUIREMENTS
   1. Conform to applicable sections of the Building Code and all local rules, regulations and ordinances.
   2. Electrical: Conform to NFPA 70 & National Electric Safety Code
   3. Obtain permits, and request inspections from authority having jurisdiction.
   4. References listed in Paragraph 1.11, this section.

1.14 FINAL INSPECTION AND TESTING

A. After the electrical installation is complete, the Contractor shall deliver to the Engineer the following information with his request for final inspection.
   1. One set of contract drawings marked to show all significant changes in equipment ratings and locations, alterations in locations of conduit runs, or of any data differing from the contract drawings. This shall include revised or changed panelboard and switchgear schedules.
   2. Certificates of final inspection from local authority.
   3. A tabulation of all motors listing their respective manufacturer, horsepower, nameplate voltage and current, actual running current after installation and overload heater rating.

B. The electrical work shall be thoroughly tested to demonstrate that the entire system is in proper working order and in accordance with the plans and specifications. Each motor with its control shall be run as nearly as possible under operating conditions for a sufficient length of time to demonstrate correct alignment, wiring capacity, speed and satisfactory operation. All main switches and circuit breakers shall be operated, but not necessarily at full load. Contractor may be required during final inspection, at the request of the Engineer to furnish test instruments for use during the testing.

C. All wiring shall be given a megger test using a 1000 Volt megger. This test shall be performed after conductors are pulled, but before final connections are made. The Engineer shall be given two (2) days' written notice of the anticipated test date so that he may witness the test if so desired. In any event, the Contractor shall record the circuit designation and the megger reading on each phase. This written record shall be submitted to the Engineer. The cost of this test or any retest caused by insufficient megger readings shall be the responsibility of the Contractor (All tests shall be done in accordance with NETA Standards).

1.15 STAFFING

A. The electrical contractor shall provide a Certified Electrical Contractor through the State, as the Electrical Superintendent for the project. The Electrical Superintendent shall be on the project site any time any electrical work is performed by the contractor.

B. In addition, the contractor shall provide one electrician classified as Journeyman for every four electrical helpers used on the project site.

1.16 AS-BUILT DRAWINGS

A. The contractor shall provide detailed as-built drawings for the project indicating all power wiring.

B. The As-Built drawings shall include detailed drawings of all duct banks, underground conduit, above ground conduit, motor control centers, PLC control panels, control drawings. These drawings shall indicate exact location of all underground electrical wiring and fiber optic cable.
   1. The location shall indicate the following

a. Centerline location
b. Width / Cross section
c. Depth

C. The Engineer will provide electronic copies of all drawings in the bid plans set on a CD for use by the contractor.

END OF SECTION 260500

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. For definitions of grounding and bonding terms see NFPA 70.

1.2 SUMMARY

A. Section includes grounding and bonding systems and equipment.

1. Underground distribution grounding.
2. Ground bonding common with lightning protection system.
3. Foundation steel electrodes.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.4 INFORMATIONAL SUBMITTALS

A. As-Built Data: Plans showing dimensioned as-built locations of grounding features specified in "Field Quality Control" Article, including the following:

1. Test wells.
2. Ground rods.
3. Ground rings.
4. Grounding arrangements and connections for separately derived systems.

B. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For grounding to include in emergency, operation, and maintenance manuals.

1. In addition to items specified in Section "Operation and Maintenance Data," include the following:

a. Instructions for periodic testing and inspection of grounding features at test wells ground rings grounding connections for separately derived systems based on NETA MTS

1) Tests shall determine if ground-resistance or impedance values remain within specified maximums, and instructions shall recommend corrective action if values do not.
2) Include recommended testing intervals.

1.6 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Burndy; Part of Hubbell Electrical Systems.
2. ERICO International Corporation.
3. Harger Lightning and Grounding.
4. ILSCO.
5. O-Z/Gedney; A Brand of the EGS Electrical Group.
6. Robbins Lightning, Inc.
7. Siemens Power Transmission & Distribution, Inc
8. Or Engineer approved equal

2.2 SYSTEM DESCRIPTION

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with UL 467 for grounding and bonding materials and equipment.

2.3 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

B. Bare Copper Conductors:

1. Solid Conductors: ASTM B 3.
2. Stranded Conductors: ASTM B 8.

C. Grounding Bus: Predrilled rectangular bars of annealed copper, 1/4 by 4 inches (6.3 by 100 mm) in cross section, with 9/32-inch (7.14-mm) holes spaced 1-1/8 inches (28 mm) apart. Stand-off insulators for mounting shall comply with UL 891 for use in switchboards, 600 V and shall be Lexan or PVC, impulse tested at 5000 V.

D. Grounding & Bonding Conductors
1. All raceways and equipment shall be provided with an Equipment Grounding Conductor as shown on the drawings. When the Equipment Grounding Conductor is not shown on the drawings, provide an Equipment Grounding Conductor per Table 250.122 of the NEC
2. All Service Entrance Equipment shall be provided with a Grounding Electrode Conductor between the Service Entrance Ground and the Grounding Electrode System as shown on the drawings. When the Grounding Electrode Conductor is not shown on the drawing, provide a Grounding Electrode Conductor per Table 250.66 of the NEC.
3. Main Bonding Jumper installed between the Service Entrance Ground and Neutral and shall be sized per Table 250.66 of the NEC.
4. System Bonding Jumper installed between the Separately Derived System Ground and Neutral and shall be sized per Table 250.66 of the NEC.

2.4 CONNECTORS

A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.

B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy.

C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

D. Bus-Bar Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

2.5 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad steel, sectional type; 3/4 inch by 10 feet (19 mm by 3 m) min

B. Chemical-Enhanced Grounding Electrodes: Copper tube, straight or L-shaped, charged with nonhazardous electrolytic chemical salts.

1. Termination: Factory-attached No. 4/0 AWG bare conductor at least 48 inches (1200 mm) long.

2. Backfill Material: Electrode manufacturers recommended material.

PART 3 - EXECUTION

3.1 APPLICATIONS

A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6AWG and larger unless otherwise indicated.

B. Underground Grounding Conductors: Install bare copper conductor, No. 2/0 AWG minimum.

1. Bury at least 24 inches (600 mm) below grade.
2. Duct-Bank Grounding Conductor: Bury 12 inches (300 mm) above duct bank when indicated as part of duct-bank installation.

C. Isolated Grounding Conductors: Green-colored insulation with continuous yellow stripe. On feeders with isolated ground, identify grounding conductor where visible to normal inspection, with alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.

D. Grounding Bus: Install in electrical equipment rooms, in rooms housing service equipment, and elsewhere as indicated.

1. Install bus horizontally, on insulated spacers 2 inches (50 mm) minimum from wall, 6 inches (150 mm) above finished floor unless otherwise indicated.
2. Where indicated on both sides of doorways, route bus up to top of door frame, across top of doorway, and down; connect to horizontal bus.

E. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Underground Connections: Welded connectors except at test wells and as otherwise indicated.
3. Connections to Ground Rods at Test Wells: Bolted connectors.
4. Connections to Structural Steel: Welded connectors.

3.2 GROUNDING AT THE SERVICE

A. Equipment grounding conductors and grounding electrode conductors shall be connected to the ground bus. Install a main bonding jumper between the neutral and ground buses.

3.3 GROUNDING SEPARATELY DERIVED SYSTEMS

A. Generator: Install grounding electrode(s) at the generator location. The electrode shall be connected to the equipment grounding conductor and to the frame of the generator.

3.4 GROUNDING UNDERGROUND DISTRIBUTION SYSTEM COMPONENTS

A. Comply with IEEE C2 grounding requirements.

B. Grounding Manholes and Handholes: Install a driven ground rod through manhole or handhole floor, close to wall, and set rod depth so 4 inches (100 mm) will extend above finished floor. If necessary, install ground rod before manhole is placed and provide No. 1/0 AWG bare, copper conductor from ground rod into manhole through a waterproof sleeve in manhole wall. Protect ground rods passing through concrete floor with a double wrapping of pressure-sensitive insulating tape or heat-shrunk insulating sleeve from 2 inches (50 mm) above to 6 inches (150 mm) below concrete. Seal floor opening with waterproof, no shrink grout.

C. Grounding Connections to Manhole Components: Bond exposed-metal parts such as inserts, cable racks, pulling irons, ladders, and cable shields within each manhole or handhole, to ground rod or grounding conductor. Make connections with No. 4 AWG minimum, stranded, hard-drawn copper bonding conductor. Train conductors' level or plumb around corners and fasten to manhole walls. Connect to cable armor and cable shields according to written instructions by manufacturer of splicing and termination kits.

D. Pad-Mounted Transformers and Switches: Install two ground rods and ground ring around the pad. Ground pad-mounted equipment and noncurrent-carrying metal items associated with substations by connecting them to underground cable and grounding electrodes. Install copper conductor not less than No. 2 AWG for ground ring and for taps to equipment grounding terminals. Bury ground ring not less than 6 inches (150 mm) from the foundation.

3.5 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with all feeders and branch circuits.

B. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.

C. Water Heater, Heat-Tracing, and Ant frost Heating Cables: Install a separate insulated equipment grounding conductor to each electric water heater and heat-tracing cable. Bond conductor to heater units, piping, connected equipment, and components.

D. Isolated Grounding Receptacle Circuits: Install an insulated equipment grounding conductor connected to the receptacle grounding terminal. Isolate conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service unless otherwise indicated.

E. Isolated Equipment Enclosure Circuits: For designated equipment supplied by a branch circuit or feeder, isolate equipment enclosure from supply circuit raceway with a nonmetallic raceway fitting listed for the purpose. Install fitting where raceway enters

enclosure, and install a separate insulated equipment grounding conductor. Isolate conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service unless otherwise indicated.

F. Poles Supporting Outdoor Lighting Fixtures: Install grounding electrode and a separate insulated equipment grounding conductor in addition to grounding conductor installed with branch-circuit conductors.

G. Metallic Fences: Comply with requirements of IEEE C2.

1. Grounding Conductor: Bare copper, not less than No. 8AWG.
2. Gates: Shall be bonded to the grounding conductor with a flexible bonding jumper.
3. Barbed Wire: Strands shall be bonded to the grounding conductor.

3.6 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Ground Bonding Common with Lightning Protection System: Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system. Bond electrical power system ground directly to lightning protection system grounding conductor at closest point to electrical service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor, and install in conduit.

C. Ground Rods: Drive rods until tops are 2 inches (50 mm) below finished floor or final grade unless otherwise indicated.

1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.
2. When service grounding is not detailed on the drawings,, install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.

D. Test Wells: Ground rod driven through drilled hole in bottom of handhole. Handholes are specified in Section 260543 "Underground Ducts and Raceways for Electrical Systems," and shall be at least 12 inches (300 mm) deep, with cover.

1. Test Wells: Install at least one test well for each service unless otherwise indicated. Install at the ground rod electrically closest to service entrance. Set top of test well flush with finished grade or floor.

E. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

F. Grounding and Bonding for Piping:

1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes; use a bolted clamp connector or bolt a lug-type connector to a pipe flange by using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.

G. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Install bonding jumper to bond across flexible duct connections to achieve continuity.

H. Grounding for Steel Building Structure: Install a driven ground rod at base of each corner column and at intermediate exterior columns at distances not more than 60 feet (18 m) apart.

I. Ground Ring: Install a grounding conductor, electrically connected to each building structure ground rod and to each steel column, extending around the perimeter of area.

1. Install copper conductor not less than No. 2/0 AWG or as shown on the drawing for ground ring and for taps to building steel.
2. Bury ground ring not less than 24 inches (600 mm) from building's foundation.

J. Concrete-Encased Grounding Electrode (Ufer Ground): Fabricate according to NFPA 70; using electrically conductive coated steel reinforcing bars or rods, at least 20 feet (6.0 m) long. If reinforcing is in multiple pieces, connect together by the usual steel tie wires or exothermic welding to create the required length.

3.7 FIELD QUALITY CONTROL

A. Perform tests and inspections.

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.

2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
3. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, at ground test wells, and at individual ground rods. Make tests at ground rods before any conductors are connected.

    a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
    b. Perform tests by fall-of-potential method according to IEEE 81 and NETA Standards.

4. Prepare dimensioned Drawings locating each test well, ground rod and ground-rod assembly, and other grounding electrodes. Identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.

B. Grounding system will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

D. Report measured ground resistances that exceed the following values:

1. Power and Lighting Equipment or System with Capacity of 500 kVA and Less: 5ohms.
2. Power and Lighting Equipment or System with Capacity of 500 to 1000 kVA: 5 ohms.
3. Power and Lighting Equipment or System with Capacity More Than 1000 kVA: 3 ohms.
4. Power Distribution Units or Panelboards Serving Electronic Equipment: 3 ohm(s).
5. Substations and Pad-Mounted Equipment: 5 ohms.
6. Manhole Grounds: 10 ohms.

E. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Engineer promptly and include recommendations to reduce ground resistance.

END OF SECTION 260526

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Hangers and supports for electrical equipment and systems.
2. Construction requirements for concrete bases.

B. Related Sections include the following:

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. IMC: Intermediate metal conduit.

C. RMC: Rigid metal conduit.

1.4 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design supports for multiple raceways, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.

C. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

D. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.5 ACTION SUBMITTALS

A. Product Data: For the following:

1. Steel slotted support systems.
2. Nonmetallic slotted support systems.

B. Shop Drawings: Signed and sealed by a qualified professional engineer. Show fabrication and installation details and include calculations for the following:

1. Trapeze hangers. Include Product Data for components.
2. Steel slotted channel systems. Include Product Data for components.
3. Nonmetallic slotted channel systems. Include Product Data for components.
4. Equipment supports.

1.6 INFORMATIONAL SUBMITTALS

A. Welding certificates.

1.7 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Comply with NFPA 70.

1.8 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified together with concrete Specifications.

B. Coordinate installation of roof mounted electrical with structural and architectural specification and drawings.

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Allied Tube & Conduit.

b. Cooper B-Line, Inc.
c. ERICO International Corporation.
d. GS Metals Corp.
e. Thomas & Betts Corporation.
f. Unistrut; Atkore International.
g. Wesanco, Inc.
h. or Approved Equal

2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
3. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
4. Channel Dimensions: Selected for applicable load criteria.

B. Nonmetallic Slotted Support Systems: Structural-grade, factory-formed, glass-fiber-resin channels and angles with 9/16-inch- (14-mm-) diameter holes at a maximum of 8 inches (200 mm) on center, in at least 1 surface.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Allied Tube & Conduit.
b. Cooper B-Line, Inc.
c. Fabco Plastics Wholesale Limited.
d. Seasafe, Inc.
e. or Approved Equal

2. Fittings and Accessories: Products of channel and angle manufacturer and designed for use with those items.
3. Fitting and Accessory Materials: Same as channels and angles, except metal items may be stainless steel.
4. Rated Strength: Selected to suit applicable load criteria.

C. Raceway and Cable Supports: As described in NECA 1 and NECA 101.

D. Conduit and Cable Support Devices shall be as indicated below:
1. PVC Conduit – PVC, Fiberglass, or Stainless Steel (unless atmosphere is corrosive to Stainless Steel)
2. RGS Conduit – Galvanized Steel
3. Aluminum Conduit – Stainless Steel
4. PVC Coated RGS – Stainless Steel (unless atmosphere is corrosive to Stainless Steel); if atmosphere is corrosive to Stainless Steel then use Fiberglass
5. EMT – Painted or Galvanized Steel
6.

E. Cable Tray Supports shall be as indicated below:
1. Galvanized Steel – Galvanized or Stainless Steel
2. Fiberglass – Stainless Steel or a combination of Fiberglass and Stainless Steel
3. Aluminum – Stainless Steel

F. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.

G. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

H. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened Portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

    a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

        1) Hilti, Inc.
        2) ITW Ramset/Red Head; Illinois Tool Works, Inc.
        3) MKT Fastening, LLC.
        4) Simpson Strong-Tie Co., Inc.
        5) or Approved Equal

2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened Portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.

    a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

        1) Cooper B-Line, Inc.
        2) Empire Tool and Manufacturing Co., Inc.
        3) Hilti, Inc.
        4) ITW Ramset/Red Head; Illinois Tool Works, Inc.
        5) MKT Fastening, LLC.
        6) or Approved Equal

3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as scheduled in NECA 1, where its Table 1 lists maximum spacings less than stated in NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.

C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted or other support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with single-bolt conduit clamps].

3.2 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

B. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb. (90 kg).

C. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To New Concrete: Bolt to concrete inserts.
3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
4. To Existing Concrete: Expansion anchor fasteners.
5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
6. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.

7. To Light Steel: Sheet metal screws.
8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.

D. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

B. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 CONCRETE BASES

A. Construct concrete bases of dimensions indicated but not less than 4 inches (100 mm) larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.

B. Use 3000-psi (20.7-MPa), 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements as specified in the contract documents.

C. Anchor equipment to concrete base.

1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor bolts to elevations required for proper attachment to supported equipment.
3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.5 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).

B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 260529

SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Metal conduits, tubing, and fittings.
2. Nonmetal conduits, tubing, and fittings.
3. Metal wireways and auxiliary gutters.
4. Nonmetal wireways and auxiliary gutters.
5. Surface raceways.
6. Boxes, enclosures, and cabinets.
7. Handholes and boxes for exterior underground cabling.

B. Related Requirements:

1. Section 260543 "Underground Ducts and Raceways for Electrical Systems" for exterior ductbanks, manholes, and underground utility construction.

1.3 DEFINITIONS

A. ARC: Aluminum rigid conduit.

B. GRC: Galvanized rigid steel conduit.

C. IMC: Intermediate metal conduit.

1.4 ACTION SUBMITTALS

A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

B. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, and attachment details.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of items involved:

1. Structural members in paths of conduit groups with common supports.
2. HVAC and plumbing items and architectural features in paths of conduit groups with common supports.

B. Seismic Qualification Certificates: For enclosures, cabinets, and conduit racks and their mounting provisions, include those for internal components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
4. Detailed description of conduit support devices and interconnections on which the certification is based and their installation requirements.

C. Source quality-control reports.

PART 2 - PRODUCTS

2.1 METAL CONDUITS, TUBING, AND FITTINGS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AFC Cable Systems, Inc.
2. Allied Tube & Conduit.
3. Anamet Electrical, Inc.
4. Electri-Flex Company.
5. O-Z/Gedney.
6. Picoma Industries.
7. Republic Conduit.
8. Robroy Industries.
9. Southwire Company.
10. Thomas & Betts Corporation.
11. Western Tube and Conduit Corporation.
12. Wheatland Tube Company.
13. or Approved Equal.

B. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. GRC: Comply with ANSI C80.1 and UL 6.

D. ARC: Comply with ANSI C80.5 and UL 6A.

E. IMC: Comply with ANSI C80.6 and UL 1242.

F. PVC-Coated Steel Conduit: PVC-coated rigid steel conduit.

1. Comply with NEMA RN 1.
2. Coating Thickness: 0.040 inch (1 mm), minimum.

G. EMT: Comply with ANSI C80.3 and UL 797.

H. FMC: Comply with UL 1; zinc-coated steel or aluminum.

I. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.

J. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.

1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886 and NFPA 70.
2. Fittings for EMT:

a. Material: Steel.
b. Type: compression.

3. Expansion Fittings: PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.
4. Coating for Fittings for PVC-Coated Conduit: Minimum thickness of 0.040 inch (1 mm), with overlapping sleeves protecting threaded joints.

K. Joint Compound for IMC, GRC, or ARC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

2.2 NONMETALLIC CONDUITS, TUBING, AND FITTINGS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AFC Cable Systems, Inc.
2. Anamet Electrical, Inc.
3. Arnco Corporation.
4. CANTEX Inc.
5. CertainTeed Corporation.
6. Condux International, Inc.
7. Electri-Flex Company.
8. Kraloy.
9. Carlon Electrical Products.

10. Niedax-Kleinhuis USA, Inc.
11. RACO; Hubbell.
12. Thomas & Betts Corporation.
13. or Approved Equal.

B. Listing and Labeling: Nonmetallic conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. ENT: Comply with NEMA TC 13 and UL 1653.

D. RNC: Type EPC-40-PVC, or EPC-80-PVC, complying with NEMA TC 2 and UL 651 unless otherwise indicated.

E. LFNC: Comply with UL 1660.

F. Rigid HDPE: Comply with UL 651A.

G. Continuous HDPE: Comply with UL 651B.

H. Coilable HDPE: Preassembled with conductors or cables and complying with ASTM D 3485.

I. RTRC: Comply with UL 1684A and NEMA TC 14.

J. Fittings for ENT and RNC: Comply with NEMA TC 3; match to conduit or tubing type and material.

K. Fittings for LFNC: Comply with UL 514B.

2.3 METAL WIREWAYS AND AUXILIARY GUTTERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cooper B-Line, Inc.
2. Hoffman.
3. Mono-Systems, Inc.
4. Square D.
5. or Approved Equal.

B. Description: Sheet metal, complying with UL 870 and NEMA 250, Type 1 for interior or Type 4X stainless steel for exterior unless otherwise indicated, and sized according to NFPA 70.

1. Metal wireways installed outdoors shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

D. Wireway Covers: Hinged type for NEMA 1 and hinged, flanged-and-gasketed type for NEMA 4X unless otherwise indicated.

E. Finish: Manufacturer's standard enamel finish.

2.4 NONMETALLIC WIREWAYS AND AUXILIARY GUTTERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Allied Moulded Products, Inc.
2. Hoffman.
3. Carlon Electrical Products.
4. Niedax-Kleinhuis USA, Inc.
5. or Approved Equal.

B. Listing and Labeling: Nonmetallic wireways and auxiliary gutters shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Description: Fiberglass polyester or PVC, extruded and fabricated to required size and shape, and having hinged cover with captive screws.

D. Fittings and Accessories: Couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings shall match and mate with wireways as required for complete system.

2.5 SURFACE RACEWAYS

A. Listing and Labeling: Surface raceways and tele-power poles shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Surface Metal Raceways: Galvanized steel with Snap-on covers complying with UL 5. Manufacturer's standard enamel finish in color selected by Architect.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Mono-Systems, Inc.
b. Panduit Corp.
c. Wiremold / Legrand.
d. or Approved Equal.

C. Surface Nonmetallic Raceways: Two- or three-piece construction, complying with UL 5A, and manufactured of rigid PVC with texture and color selected by Architect from

manufacturer's standard colors. Product shall comply with UL 94 V-0 requirements for self-extinguishing characteristics.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Hubbell Incorporated.
    b. Mono-Systems, Inc.
    c. Panduit Corp.
    d. Wiremold / Legrand.
    e. or Approved Equal.

D. Tele-Power Poles:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Mono-Systems, Inc.
    b. Panduit Corp.
    c. Wiremold / Legrand.
    d. or Approved Equal.

2. Material: Galvanized steel with baked-enamel finish in Architect choice of colors.
3. Fittings and Accessories: Dividers, end caps, covers, cutouts, wiring harnesses, devices, mounting materials, and other fittings shall match and mate with tele-power pole as required for complete system.

2.6 BOXES, ENCLOSURES, AND CABINETS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Adalet.
2. Cooper Technologies Company; Cooper Crouse-Hinds.
3. EGS/Appleton Electric.
4. Erickson Electrical Equipment Company.
5. FSR Inc.
6. Hoffman.
7. Hubbell Incorporated.
8. Kraloy.
9. Milbank Manufacturing Co.
10. Mono-Systems, Inc.
11. O-Z/Gedney.
12. RACO; Hubbell.
13. Robroy Industries.
14. Spring City Electrical Manufacturing Company.
15. Stahlin Non-Metallic Enclosures.
16. Thomas & Betts Corporation.
17. Wiremold / Legrand.
18. or Approved Equal.

B. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.

C. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.

D. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, ferrous alloy or aluminum to match raceway type, Type FD, with gasketed cover.

E. Nonmetallic Outlet and Device Boxes: Comply with NEMA OS 2 and UL 514C.

F. Metal Floor Boxes:

1. Material: sheet metal.
2. Type: Fully adjustable.
3. Shape: Rectangular.
4. Listing and Labeling: Metal floor boxes shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

G. Nonmetallic Floor Boxes: Nonadjustable, round.

1. Listing and Labeling: Nonmetallic floor boxes shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

H. Luminaire Outlet Boxes: Nonadjustable, designed for attachment of luminaire weighing 50 lb (23 kg). Outlet boxes designed for attachment of luminaires weighing more than 50 lb (23 kg) shall be listed and marked for the maximum allowable weight.

I. Paddle Fan Outlet Boxes: Nonadjustable, designed for attachment of paddle fan weighing 70 lb (32 kg).

1. Listing and Labeling: Paddle fan outlet boxes shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

J. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

K. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, cast aluminum with gasketed cover, unless otherwise noted.

L. Box extensions used to accommodate new building finishes shall be of same material as recessed box.

M. Device Box Dimensions: 4 inches square by 2-1/8 inches deep (100 mm square by 60 mm deep), unless otherwise noted.

N. Gangable boxes are prohibited, unless specifically noted.

O. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, Type 4X Stainless Steel for outdoor locations, Type 12 for indoor locations, with continuous-hinge cover with flush latch unless otherwise indicated.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
2. Nonmetallic Enclosures: Fiberglass.
3. Interior Panels: Steel; all sides finished with manufacturer's standard enamel.

P. Cabinets:

1. NEMA 250, Type 4X Stainless Steel for outdoor locations, Type 12 for indoor locations, with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
2. Hinged door in front cover with flush latch and concealed hinge.
3. Key latch to match panelboards.
4. Metal barriers to separate wiring of different systems and voltage.
5. Accessory feet where required for freestanding equipment.
6. Nonmetallic cabinets shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.7 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING

A. General Requirements for Handholes and Boxes:

1. Boxes and handholes for use in underground systems shall be designed and identified as defined in NFPA 70, for intended location and application.
2. Boxes installed in wet areas shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Polymer-Concrete Handholes and Boxes with Polymer-Concrete Cover: Molded of sand and aggregate, bound together with polymer resin, and reinforced with steel, fiberglass, or a combination of the two.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. Armorcast Products Company.
   b. Carson Industries LLC.
   c. NewBasis.
   d. Oldcastle Precast, Inc.
   e. Quazite: Hubbell Power System, Inc.
   f. Synertech Moulded Products.
   g. Or approved equal.

2. Standard: Comply with SCTE 77.
3. Configuration: Designed for flush burial with open bottom unless otherwise indicated.
4. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure and handhole location.
5. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
6. Cover Legend: Molded lettering, as required to identify system indicated on the drawings.

7. Conduit Entrance Provisions: Conduit-terminating fittings shall mate with entering ducts for secure, fixed installation in enclosure wall.
8. Handholes 12 Inches Wide by 24 Inches Long (300 mm Wide by 600 mm Long) and Larger: Have inserts for cable racks and pulling-in irons installed before concrete is poured.

C. Fiberglass Handholes and Boxes: Molded of fiberglass-reinforced polyester resin, with frame and covers of fiberglass unless otherwise noted.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Armorcast Products Company.
b. Carson Industries LLC.
c. NewBasis.
d. Nordic Fiberglass, Inc.
e. Oldcastle Precast, Inc; Christy Concrete Products.
f. Quazite: Hubbell Power System, Inc; Hubbell Power Systems.
g. Synertech Moulded Products.
h. Or Approved Equal.

2. Standard: Comply with SCTE 77.
3. Color of Frame and Cover: Gray.
4. Configuration: Designed for flush burial with open bottom unless otherwise indicated.
5. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure and handhole location.
6. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
7. Cover Legend: Molded lettering, as required to identify system indicated on the drawings.
8. Conduit Entrance Provisions: Conduit-terminating fittings shall mate with entering ducts for secure, fixed installation in enclosure wall.
9. Handholes 12 Inches Wide by 24 Inches Long (300 mm Wide by 600 mm Long) and Larger: Have inserts for cable racks and pulling-in irons installed before concrete is poured.

2.8 SOURCE QUALITY CONTROL FOR UNDERGROUND ENCLOSURES

A. Handhole and Pull-Box Prototype Test: Test prototypes of handholes and boxes for compliance with SCTE 77. Strength tests shall be for specified tier ratings of products supplied.

1. Tests of materials shall be performed by an independent testing agency.
2. Strength tests of complete boxes and covers shall be by either an independent testing agency or manufacturer. A qualified registered professional engineer shall certify tests by manufacturer.
3. Testing machine pressure gages shall have current calibration certification complying with ISO 9000 and ISO 10012 and traceable to NIST standards.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below unless otherwise indicated:

1. Exposed Conduit: ARC.
2. Concealed Conduit, Aboveground: RNC, Type EPC-40-PVC, unless otherwise indicated on drawings.
3. Underground Conduit: RNC, Type EPC-40-PVC when concrete encased, Type EPC-80-PVC when direct buried,
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC unless otherwise indicated on drawings.
5. Boxes and Enclosures, Aboveground: NEMA 250, Type 4X Stainless steel unless otherwise indicated on drawings.

B. Indoors: Apply raceway products as specified below unless otherwise indicated:

1. Exposed, Not Subject to Physical Damage: EMT.
2. Exposed, Not Subject to Severe Physical Damage: EMT.
3. Exposed and Subject to Severe Physical Damage: GRC. Raceway locations include the following:

    a. Loading dock.
    b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
    c. Mechanical rooms.
    d. Gymnasiums.

4. Concealed in Ceilings and Interior Walls and Partitions: EMT.
5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
6. Damp or Wet Locations: GRC unless otherwise noted.
7. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4X stainless steel in institutional and commercial kitchens and damp or wet locations, unless otherwise noted.

C. Minimum Raceway Size: 3/4-inch (21-mm) trade size.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with this type of conduit. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer and apply in thickness and number of coats recommended by manufacturer.

3. EMT: Use compression, steel fittings. Comply with NEMA FB 2.10.
4. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.

E. Install nonferrous conduit or tubing for circuits operating above 60 Hz. Where aluminum raceways are installed for such circuits and pass through concrete, install in nonmetallic sleeve.

F. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.

G. Install surface raceways only where indicated on Drawings.

H. Do not install nonmetallic conduit where ambient temperature exceeds 120 deg F (49 deg C).

3.2 INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.

B. Keep raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

C. Complete raceway installation before starting conductor installation.

D. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for hangers and supports.

E. Arrange stub-ups so curved portions of bends are not visible above finished slab.

F. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches (300 mm) of changes in direction.

G. Conceal conduit and EMT within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.

H. Support conduit within 12 inches (300 mm) of enclosures to which attached.

I. Raceways Embedded in Slabs:

1. Run conduit larger than 1-inch (27-mm) trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support. Secure raceways to reinforcement at maximum 10-foot (3-m) intervals.
2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
3. Arrange raceways to keep a minimum of 3 inches of concrete cover in all directions.

4. Do not embed threadless fittings in concrete unless specifically approved by Engineer for each specific location.

J. Stub-ups to Above Recessed Ceilings:

1. Use EMT, IMC, or RMC for raceways.
2. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.

K. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

L. Coat field-cut threads on PVC-coated raceway with a corrosion-preventing conductive compound prior to assembly.

M. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch (35mm) trade size and insulated throat metal bushings on 1-1/2-inch (41-mm) trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.

N. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.

O. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.

P. Cut conduit perpendicular to the length. For conduits 2-inch (53-mm) trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.

Q. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.

R. Surface Raceways:

1. Install surface raceway with a minimum 2-inch (50-mm) radius control at bend points.
2. Secure surface raceway with screws or other anchor-type devices at intervals not exceeding 48 inches (1200 mm) and with no less than two supports per straight raceway section. Support surface raceway according to manufacturer's written instructions. Tape and glue are not acceptable support methods.

S. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings according to NFPA 70.

T. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where an underground raceway enters a building or structure.
3. Where otherwise required by NFPA 70.

U. Comply with manufacturer's written instructions for solvent welding RNC and fittings.

V. Expansion-Joint Fittings:
1. Provide expansion joint fitting any time conduit systems cross building expansion joints or structural expansion joints.
2. Provide expansion fittings as recommended by the manufacturer of the conduit.
3. Provide expansion fittings per NFPA 70.
4. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.

W. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 72 inches (1830 mm) of flexible conduit for recessed and semi-recessed luminaires, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

1. Use LFMC in damp or wet locations subject to severe physical damage.
2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.
3. Provide a separate ground for all flex conduits.

X. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.

Y. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block and install box flush with surface of wall. Prepare block surfaces to provide a flat surface for a raintight connection between boxes and cover plate or supported equipment and box.

Z. Horizontally separate boxes mounted on opposite sides of walls, so they are not in the same vertical channel.

AA. Locate boxes so that cover or plate will not span different building finishes.

BB. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.

CC. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

DD. Set metal floor boxes level and flush with finished floor surface.

EE. Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.

3.3 INSTALLATION OF UNDERGROUND CONDUIT

A. Direct-Buried Conduit:

1. Excavate trench bottom to provide firm and uniform support for conduit.
2. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches (300 mm) of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction per 95% modified proctor density.
3. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through floor. Wrap conduit with 2 coats of 3M Scotch Wrap or Approved Equal.

    a. Couple steel conduits to ducts with adapters designed for this purpose and encase coupling with 3 inches (75 mm) of concrete for a minimum of 12 inches (300 mm) on each side of the coupling.
    b. For stub-ups at equipment mounted on outdoor concrete bases and where conduits penetrate building foundations, extend steel conduit horizontally a minimum of 60 inches (1500 mm) from edge of foundation or equipment base. Install insulated grounding bushings on terminations at equipment.
4. Underground Warning Tape: Comply with requirements in Section 260553 "Identification for Electrical Systems."

3.4 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

3.5 FIRESTOPPING

A. Install firestopping at penetrations of fire-rated floor and wall assemblies. Comply with requirements in Section 078413 "Penetration Firestopping." If Section 078413 is not included as part of the project specifications, provide fire rated penetrations based on the fire proofing material being supplied. All penetrations through fire rated walls shall be fire proofed.

3.6 PROTECTION

A. Protect coatings, finishes, and cabinets from damage and deterioration.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 260533

SECTION 260543 - UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Direct-buried conduit, ducts, and duct accessories.
2. Concrete-encased conduit, ducts, and duct accessories.
3. Handholes and boxes.
4. Manholes.

1.3 DEFINITIONS

A. Trafficways: Locations where vehicular or pedestrian traffic is a normal course of events.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include duct-bank materials, including separators and miscellaneous components.
2. Include ducts and conduits and their accessories, including elbows, end bells, bends, fittings, and solvent cement.
3. Include accessories for manholes, handholes, and boxes.
4. Include warning tape.

B. Shop Drawings:

1. Precast manholes and handholes:

a. Include plans, elevations, sections, details, attachments to other work, and accessories.
b. Include duct entry provisions, including locations and duct sizes.
c. Include reinforcement details.
d. Include frame and cover design and manhole frame support rings.
e. Include Step details.

f. Include grounding details.
g. Include dimensioned locations of cable rack inserts, pulling-in and lifting irons, and sumps.
h. Include joint details.

2. Factory-Fabricated Handholes and Boxes Other Than Precast Concrete:

a. Include dimensioned plans, sections, and elevations, and fabrication and installation details.
b. Include duct entry provisions, including locations and duct sizes.
c. Include cover design.
d. Include grounding details.
e. Include dimensioned locations of cable rack inserts, and pulling-in and lifting irons.

1.5 INFORMATIONAL SUBMITTALS

A. Duct-Bank Coordination Drawings: Show duct profiles and coordination with other utilities and underground structures.

1. Include plans and sections, drawn to scale, and show bends and locations of expansion fittings.

B. Product Certificates: For concrete and steel used in precast concrete manholes and handholes, as required by ASTM C 858.

C. Qualification Data: For professional engineer and testing agency responsible for testing nonconcrete handholes and boxes.

D. Source quality-control reports.

E. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.

1.7 FIELD CONDITIONS

A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions, and then only after arranging to provide temporary electrical service according to requirements indicated:

1. Notify Engineer and Owner no fewer than two days in advance of proposed interruption of electrical service.
2. Do not proceed with interruption of electrical service without Engineer and Owner's written permission.

B. Ground Water: Assume ground-water level is at grade level unless a lower water table is noted in the contract documents.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR DUCTS AND RACEWAYS

A. Comply with ANSI C2.

2.2 CONDUIT

A. Rigid Steel Conduit: Galvanized. Comply with ANSI C80.1.

B. RNC: NEMA TC 2, Type EPC-40-PVC and Type EPC-80-PVC, UL 651, with matching fittings by same manufacturer as the conduit, complying with NEMA TC 3 and UL 514B.

2.3 NONMETALLIC DUCTS AND DUCT ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ARNCO Corp.
2. Beck Manufacturing.
3. Cantex, Inc.
4. CertainTeed Corporation.
5. Condux International, Inc.
6. ElecSys, Inc.
7. Electri-Flex Company.
8. IPEX Inc.
9. Lamson & Sessions; Carlon Electrical Products.
10. Spiraduct/AFC Cable Systems, Inc.
11. or Approved Equal.

B. Underground Plastic Utilities Duct: NEMA TC 2, UL 651, ASTM F 512, Type EPC-80 (only when specifically called out on the drawings) and Type EPC-40, with matching fittings complying with NEMA TC 3 by same manufacturer as the duct.

C. Duct Accessories:

1. Duct Separators: Factory-fabricated rigid PVC interlocking spacers, sized for type and size of ducts with which used, and selected to provide minimum duct spacing indicated while supporting ducts during concreting or backfilling.
2. Warning Tape: Underground-line warning tape specified in Section 260553 "Identification for Electrical Systems."

2.4 PRECAST CONCRETE HANDHOLES AND BOXES (All Handholes and Boxes larger than 4 sq. ft. shall be precast)

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Christy Concrete Products.
2. Elmhurst-Chicago Stone Co.
3. Oldcastle Precast Group.
4. Rinker Group, Ltd.
5. Riverton Concrete Products.
6. Utility Concrete Products, LLC.
7. Utility Vault Co.
8. Wausau Tile Inc.
9. or Approved Equal

B. Comply with ASTM C 858 for design and manufacturing processes.

C. Top of handhole to be located 6” above finished grade (handhole cover is not traffic rated).

D. Description: Factory-fabricated, reinforced-concrete, monolithically poured walls and bottom unless open-bottom enclosures are indicated. Frame and cover shall form top of enclosure and shall have load rating consistent with that of handhole or box.
1. Frame and Cover: Galvanized steel frame, with hinged galvanized steel access door assembly with tamper-resistant, captive, cover-securing bolts.

a. Cover Hinges: Concealed, with hold-open ratchet assembly.
b. Cover Handle: Recessed.

2. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
3. Cover Legend: Molded lettering, as required to identify system indicated on the drawings.
4. Configuration: Units shall be designed for raised burial and have open bottom unless otherwise indicated. (Install handholes on a minimum of 12” of clean crushed stone.)
5. Extensions and Slabs: Designed to mate with bottom of enclosure. Same material as enclosure.

a. Extension shall provide increased depth of 12 inches (300 mm).
b. Slab: Same dimensions as bottom of enclosure and arranged to provide closure.

6. Joint Sealant: Asphaltic-butyl material with adhesion, cohesion, flexibility, and durability properties necessary to withstand maximum hydrostatic pressures at the installation location with the ground-water level at grade.
7. Windows: Precast openings in walls, arranged to match dimensions and elevations of approaching ducts and duct banks, plus an additional 12 inches (300 mm) vertically and horizontally to accommodate alignment variations.

a. Windows shall be located no less than 6 inches (150 mm) from interior surfaces of walls, floors, or frames and covers of handholes, but close enough to corners to facilitate racking of cables on walls.
b. Window opening shall have cast-in-place, welded-wire fabric reinforcement for field cutting and bending to tie to concrete envelopes of duct banks.
c. Window openings shall be framed with at least two additional No. 3 steel reinforcing bars in concrete around each opening.

8. Handholes shall have inserts for cable racks and pulling-in irons installed before concrete is poured.

2.5 HANDHOLES AND BOXES OTHER THAN PRECAST CONCRETE (for area less than 4 sq. ft.)

A. General Requirements for Handholes and Boxes: Comply with SCTE 77. Comply with tier requirements in "Underground Enclosure Application" Article.

1. Color: Gray.
2. Configuration: Units shall be designed for flush burial and have open bottom unless otherwise indicated. (Install on 12” of clean crushed stone)
3. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure.
4. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
5. Cover Legend: Molded lettering, as required to identify system indicated on the drawing.
6. All conduits shall enter the handholes and other boxes from the bottom. All 90-degree bends shall be long radius.

B. Polymer Concrete Handholes and Boxes with Polymer Concrete Cover: Molded of sand and aggregate, bound together with a polymer resin, and reinforced with steel or fiberglass or a combination of the two. Boxes shall be rated for Tier 22 or Tier 15 based on location.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Armorcast Products Company.
b. Carson Industries LLC.
c. NewBasis.
d. Quazite: Hubbell Power System, Inc.
e. or Approved Equal.

2.6 PRECAST MANHOLES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Christy Concrete Products.
2. Elmhurst-Chicago Stone Co.

3. Oldcastle Precast Group.
4. Rinker Group, Ltd.
5. Riverton Concrete Products.
6. Utility Concrete Products, LLC.
7. Utility Vault Co.
8. Wausau Tile Inc.
9. or Approved Equal

B. Comply with ASTM C 858.

C. Precast Manholes: One-piece units and units with interlocking mating sections, complete with accessories, hardware, and features.

D. Windows: Precast openings in walls, arranged to match dimensions and elevations of approaching ducts and duct banks, plus an additional 12 inches (300 mm) vertically and horizontally to accommodate alignment variations.

1. Windows shall be located no less than 6 inches (150 mm) from interior surfaces of walls, floors, or roofs of manholes, but close enough to corners to facilitate racking of cables on walls.
2. Window opening shall have cast-in-place, welded-wire fabric reinforcement for field cutting and bending to tie in to concrete envelopes of duct banks.
3. Window openings shall be framed with at least two additional No. 3 steel reinforcing bars in concrete around each opening.

E. Concrete Knockout Panels: 1-1/2 to 2 inches (38 to 50 mm) thick, for future conduit entrance and sleeve for ground rod.

F. Ground Rod Sleeve: Provide a 3-inch (75-mm) PVC conduit sleeve in manhole floors 2 inches (50 mm) from the wall adjacent to, but not underneath, the ducts routed from the facility.

G. Joint Sealant: Asphaltic-butyl material with adhesion, cohesion, flexibility, and durability properties necessary to withstand maximum hydrostatic pressures at the installation location with the ground-water level at grade.

H. Manhole Frames, Covers, and Chimney Components: Comply with structural design loading specified for manhole.

1. Frame and Cover: Weatherproof, gray cast iron complying with ASTM A 48/A 48M, Class 30B with milled cover-to-frame bearing surfaces; diameter, 29 inches (725 mm).

a. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
b. Special Covers: Recess in face of cover designed to accept finish material in paved areas.

2. Cover Legend: Cast in. Selected to suit system.

a. Legend: "ELECTRIC-LV" for duct systems with power wires and cables for systems operating at 600 V and less.
b. Legend: "ELECTRIC-HV" for duct systems with medium-voltage cables.

3. Manhole Chimney Components: Precast concrete rings with dimensions matched to those of roof opening.

a. Mortar for Chimney Ring and Frame and Cover Joints: Comply with ASTM C 270, Type M, except for quantities less than 2.0 cu. ft. (60 L) where packaged mix complying with ASTM C 387, Type M, may be used.

I. Manhole Sump Frame and Grate: ASTM A 48/A 48M, Class 30B, gray cast iron.

J. Pulling Eyes in Concrete Walls: Eyebolt with reinforcing-bar fastening insert, 2-inch-(50-mm-) diameter eye, and 1-by-4-inch (25-by-100-mm) bolt.

1. Working Load Embedded in 6-Inch (150-mm), 4000-psi (27.6-MPa) Concrete: 13,000-lbf (58-kN) minimum tension.

K. Pulling-In and Lifting Irons in Concrete Floors: 7/8-inch- (22-mm-) diameter, hot-dip galvanized, bent steel rod; stress relieved after forming; and fastened to reinforcing rod. Exposed triangular opening.

1. Ultimate Yield Strength: 40,000-lbf (180-kN) shear and 60,000-lbf (270-kN) tension.

L. Expansion Anchors for Installation after Concrete Is Cast: Zinc-plated, carbon-steel-wedge type with stainless-steel expander clip with 1/2-inch (13-mm) bolt, 5300-lbf (24-kN) rated pullout strength, and minimum 6800-lbf (30-kN) rated shear strength.

M. Cable Rack Assembly: hot-dip galvanized, except insulators.

1. Stanchions: T-section or channel; 2-1/4-inch (56-mm) nominal size; punched with 14 holes on 1-1/2-inch (38-mm) centers for cable-arm attachment.
2. Arms: 1-1/2 inches (38 mm) wide, lengths ranging from 3 inches (75 mm) with 450-lb (204-kg) minimum capacity to 18 inches (450 mm) with 250-lb (114-kg) minimum capacity. Arms shall have slots along full length for cable ties and be arranged for secure mounting in horizontal position at any vertical location on stanchions.
3. Insulators: High-glaze, wet-process porcelain arranged for mounting on cable arms.

N. Duct-Sealing Compound: Nonhardening, safe for contact with human skin, not deleterious to cable insulation, and workable at temperatures as low as 35 deg F (2 deg C). Capable of withstanding temperature of 300 deg F (150 deg C) without slump and adhering to clean surfaces of plastic ducts, metallic conduits, conduit coatings, concrete, masonry, lead, cable sheaths, cable jackets, insulation materials, and common metals.

O. Cover Hooks: Heavy duty, designed for lifts 60 lbf (270 N) and greater, Two required.

2.7 SOURCE QUALITY CONTROL

A. Test and inspect precast concrete utility structures according to ASTM C 1037.

B. Nonconcrete Handhole and Pull-Box Prototype Test: Test prototypes of manholes and boxes for compliance with SCTE 77. Strength tests shall be for specified tier ratings of products supplied.
   1. Strength tests of complete boxes and covers shall be by either an independent testing agency or manufacturer. A qualified registered professional engineer shall certify tests by manufacturer.
   2. Testing machine pressure gages shall have current calibration certification, complying with ISO 9000 and ISO 10012, and traceable to NIST standards.

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordinate layout and installation of ducts, manholes, handholes, and boxes with final arrangement of other utilities, site grading, and surface features as determined in the field. Notify Engineer if there is a conflict between areas of excavation and existing structures or archaeological sites to remain.

3.2 UNDERGROUND DUCT APPLICATION

A. Ducts for Electrical Cables More than 600 V: RNC, NEMA Type EPC-40-PVC, in concrete-encased duct bank unless otherwise indicated.

B. Ducts for Electrical Feeders 600 V and Less: RNC, NEMA Type EPC-40 -PVC, in concrete-encased duct bank unless otherwise indicated.

C. Ducts for Electrical Branch Circuits: RNC, NEMA Type EPC-40-PVC, in direct-buried duct bank unless otherwise indicated.

D. Underground Ducts Crossing Roadways and Paved Areas: RNC, NEMA Type EPC-40-PVC, encased in reinforced concrete.

3.3 UNDERGROUND ENCLOSURE APPLICATION

A. Handholes and Boxes for 600 V and Less:

   1. Units in Roadways and Other Deliberate Traffic Paths: Precast concrete. AASHTO HB 17, H-20 structural load rating.
   2. Units in Driveway, Parking Lot, and Off-Roadway Locations, Subject to Occasional, Nondeliberate Loading by Heavy Vehicles: Precast concrete, AASHTO HB 17, H-20 or Polymer concrete, SCTE 77, Tier 22 structural load rating.

3. Units in Sidewalk, Similar Applications, and Non-Paved Areas with a Safety Factor for Nondeliberate Loading by Vehicles: Precast concrete, AASHTO HB 17, H-10 or Polymer concrete units, SCTE 77, Tier 15

B. Manholes: Precast concrete.

1. H-20 structural load rating according to AASHTO HB 17.

3.4 EARTHWORK

A. Excavation and Backfill: Comply with the provisions of the contract documents and the manufacturer's recommendations. Compact gravel under manholes and handholes to 95% modified proctor.
1. Provide 12" of crushed stone for placement of all manholes and handholes

B. Restore surface features at areas disturbed by excavation and re-establish original grades unless otherwise indicated. Replace removed sod immediately after backfilling is completed.

C. Cut and patch existing pavement in the path of underground ducts and utility structures according to the general provisions of the contract.

3.5 DUCT INSTALLATION

A. Install ducts according to NEMA TCB 2.

B. Slope: Pitch ducts a minimum slope of 1:300 down toward manholes and handholes and away from buildings and equipment. Slope ducts from a high point in runs between two manholes, to drain in both directions.

C. Curves and Bends: Use 5-degree angle couplings for small changes in direction. Use manufactured long sweep bends with a minimum radius of 48 inches (1200 mm), both horizontally and vertically, at other locations unless otherwise indicated.

D. Joints: Use solvent-cemented joints in ducts and fittings and make watertight according to manufacturer's written instructions. Stagger couplings so those of adjacent ducts do not lie in same plane.

E. Installation Adjacent to High-Temperature Steam Lines: Where duct banks are installed parallel to underground steam lines, perform calculations showing the duct bank will not be subject to environmental temperatures above 40 deg C. Where environmental temperatures are calculated to rise above 40 deg C, and anywhere the duct bank crosses above an underground steam line, install insulation blankets listed for direct burial to isolate the duct bank from the steam line.

F. Duct Entrances to Manholes and Concrete and Polymer Concrete Handholes: Use end bells, spaced approximately 10 inches (250 mm) over center for 5-inch (125-mm) ducts, and vary proportionately for other duct sizes.

1. Begin change from regular spacing to end-bell spacing 10 feet (3 m) from the end bell without reducing duct line slope and without forming a trap in the line.
2. Direct-Buried Duct Banks: Install an expansion and deflection fitting in each conduit in the area of disturbed earth adjacent to manhole or handhole. Install an expansion fitting near the center of all straight line direct-buried duct banks with calculated expansion of more than 3/4 inch (19 mm).
3. Grout end bells into structure walls from both sides to provide watertight entrances.

G. Building Wall Penetrations: Make a transition from underground duct to rigid steel conduit at least 10 feet (3 m) outside the building wall, without reducing duct line slope away from the building, and without forming a trap in the line. Use fittings manufactured for duct-to-conduit transition. Install conduit penetrations of building walls as specified in Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

H. Building Conduit Entry Sealing: Provide temporary closure at terminations of ducts that have cables pulled. Seal spare ducts at terminations. Use sealing compound and plugs to withstand at least 15-psig (1.03-MPa) hydrostatic pressure.

I. Pulling Cord: Install 100-lbf- (445-N-) test nylon cord in empty ducts.

J. Concrete-Encased Ducts: Support ducts on duct separators.

1. Excavate trench bottom to provide firm and uniform support for duct bank.
2. Width: Excavate trench 12 inches (300 mm) wider than duct bank on each side.
3. Depth: Install top of duct bank at least 24 inches (600 mm) below finished grade in areas not subject to deliberate traffic, and at least 30 inches (750 mm) below finished grade in deliberate traffic paths for vehicles unless otherwise indicated.
4. Support ducts on duct separators coordinated with duct size, duct spacing, and outdoor temperature.
5. Separator Installation: Space separators close enough to prevent sagging and deforming of ducts, with not less than four spacers per 20 feet (6 m) of duct. Secure separators to earth and to ducts to prevent floating during concreting. Stagger separators approximately 6 inches (150 mm) between tiers. Tie entire assembly together using fabric straps; do not use tie wires or reinforcing steel that may form conductive or magnetic loops around ducts or duct groups.
6. Minimum Space between Ducts: 3 inches (75 mm) between ducts and exterior envelope wall, 2 inches (50 mm) between ducts for like services, and 4 inches (100 mm) between power and signal ducts.
7. Elbows: Use manufactured rigid steel conduit elbows for stub-ups at poles and equipment, at building entrances through floor, and at changes of direction in duct run.

    a. Couple steel conduits to ducts with adapters designed for this purpose and encase coupling with 3 inches (75 mm) of concrete.
    b. Stub-Ups to Equipment: For equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches (1500 mm) from edge of base. Install insulated grounding bushings on terminations at equipment.

8. Reinforcement: Reinforce concrete-encased duct banks where they cross disturbed earth and where indicated. Arrange reinforcing rods and ties without forming conductive or magnetic loops around ducts or duct groups.
9. Forms: Use walls of trench to form side walls of duct bank where soil is self-supporting and concrete envelope can be poured without soil inclusions; otherwise, use forms.
10. Concrete Cover: Install a minimum of 3 inches (75 mm) of concrete cover at top and bottom, and a minimum of 2 inches (50 mm) on each side of duct bank.
11. Concreting Sequence: Pour each run of envelope between manholes or other terminations in one continuous operation.

    a. Start at one end and finish at the other, allowing for expansion and contraction of ducts as their temperature changes during and after the pour. Use expansion fittings installed according to manufacturer's written recommendations or use other specific measures to prevent expansion-contraction damage.
    b. If more than one pour is necessary, terminate each pour in a vertical plane and install 3/4-inch (15-mm) reinforcing-rod dowels extending a minimum of 18 inches (450 mm) into concrete on both sides of joint near corners of envelope.

12. Pouring Concrete: Comply with requirements in accordance with the general conditions of the contract. Place concrete carefully during pours to prevent voids under and between conduits and at exterior surface of envelope. Do not allow a heavy mass of concrete to fall directly onto ducts. Allow concrete to flow to center of bank and rise up in middle, uniformly filling all open spaces. Do not use power-driven agitating equipment unless specifically designed for duct-bank application.

K. Direct-Buried Duct Banks:

1. Excavate trench bottom to provide firm and uniform support for duct bank.
2. Support ducts on duct separators coordinated with duct size, duct spacing, and outdoor temperature.
3. Space separators close enough to prevent sagging and deforming of ducts, with not less than four spacers per 20 feet (6 m) of duct. Secure separators to earth and to ducts to prevent displacement during backfill and yet permit linear duct movement due to expansion and contraction as temperature changes. Stagger spacers approximately 6 inches (150 mm) between tiers.
4. Depth: Install top of duct bank at least 24” below finished grade unless otherwise indicated.
5. Set elevation of bottom of duct bank below frost line.
6. Install ducts with a minimum of 3 inches (75 mm) between ducts for like services and 6 inches (150 mm) between power and signal ducts.
7. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment, at building entrances through floor, and at changes of direction in duct run.

    a. Couple steel conduits to ducts with adapters designed for this purpose and encase coupling with 3 inches (75 mm) of concrete.
    b. For equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches (1500 mm) from edge of equipment

pad or foundation. Install insulated grounding bushings on terminations at equipment.

8. After installing first tier of ducts, backfill and compact. Start at tie-in point and work toward end of duct run, leaving ducts at end of run free to move with expansion and contraction as temperature changes during this process. Repeat procedure after placing each tier. After placing last tier, hand place backfill to 4 inches (100 mm) over ducts and hand tamp. Firmly tamp backfill around ducts to provide maximum supporting strength. Use hand tamper only. After placing controlled backfill over final tier, make final duct connections at end of run and complete backfilling with normal compaction. Comply to 95% modified Proctor.

    a. Place minimum 3 inches (75 mm) of sand as a bed for duct bank. Place sand to a minimum of 6 inches (150 mm) above top level of duct bank.

L. Warning Tape: Bury warning tape approximately 12 inches (300 mm) above all concrete-encased ducts and duct banks. Align tape parallel to and within 3 inches (75 mm) of centerline of duct bank. Provide an additional warning tape for each 12-inch (300-mm) increment of duct-bank width over a nominal 18 inches (450 mm). Space additional tapes 12 inches (300 mm) apart, horizontally.

3.6 INSTALLATION OF CONCRETE MANHOLES, HANDHOLES, AND BOXES

A. Precast Concrete Handhole and Manhole Installation:

1. Comply with ASTM C 891 unless otherwise indicated.
2. Install units level and plumb and with orientation and depth coordinated with connecting ducts, to minimize bends and deflections required for proper entrances.
3. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1-inch (25-mm) sieve to No. 4 (4.75-mm) sieve and compacted to same density as adjacent undisturbed earth.

B. Elevations:

1. Manhole Roof: Install with rooftop at least 15 inches (375 mm) below finished grade.
2. Manhole Frame: In paved areas and trafficways, set frames flush with finished grade. Set other manhole frames 1 inch (25 mm) above finished grade.
3. Install handholes with bottom below frost line.
4. Traffic Rated Handhole Covers: In paved areas and trafficways, set surface flush with finished grade. Set covers of other handholes 1 inch (25 mm) above finished grade.
5. Install precast handholes without traffic rated lids 6” above grade.
6. Where indicated, cast handhole cover frame integrally with handhole structure.

C. Drainage: Install drains in bottom of manholes where indicated. Coordinate with drainage provisions indicated.

D. Manhole Access: Circular opening in manhole roof; sized to match cover size.

1. Install chimney, constructed of precast concrete collars and rings, to support cast-iron frame to connect cover with manhole roof opening. Provide moisture-tight masonry joints and waterproof grouting for frame to chimney.

E. Waterproofing: Apply waterproofing to exterior surfaces of manholes and precast concrete handholes after concrete has cured at least three days. After ducts have been connected and grouted, and before backfilling, waterproof joints and connections, and touch up abrasions and scars. Waterproof exterior of manhole chimneys after mortar has cured at least three days.

F. Hardware: Install removable hardware, including pulling eyes, cable stanchions, and cable arms, and insulators, as required for installation and support of cables and conductors and as indicated.

G. Field-Installed Bolting Anchors in Manholes and Concrete Handholes: Do not drill deeper than 3-7/8 inches (97 mm) for manholes and 2 inches (50 mm) for handholes, for anchor bolts installed in the field. Use a minimum of two anchors for each cable stanchion.

3.7 INSTALLATION OF HANDHOLES AND BOXES OTHER THAN PRECAST CONCRETE

A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting ducts, to minimize bends and deflections required for proper entrances. Use box extension if required to match depths of ducts, and seal joint between box and extension as recommended by manufacturer.

B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch (12.5-mm) sieve to No. 4 (4.75-mm) sieve and compacted to same density as adjacent undisturbed earth.

C. Elevation: In paved areas and trafficways, set cover flush with finished grade. Set covers of other handholes 1 inch (25 mm) above finished grade.

D. Install handholes and boxes with bottom below frost line.

E. Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors and as indicated. Select arm lengths to be long enough to provide spare space for future cables, but short enough to preserve adequate working clearances in enclosure.

F. Field cut openings for ducts and conduits according to enclosure manufacturer's written instructions. Cut wall of enclosure with a tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.

G. For enclosures subject to occasional, nondeliberate, heavy-vehicle loading, form and pour a concrete ring encircling, and in contact with, enclosure and with top surface screeded to top of box cover frame. Bottom of ring shall rest on compacted earth.

1. Concrete: 3000 psi (20 kPa), 28-day strength, complying with the provisions of the general contract. Finish with a trowel.
2. Dimensions: in accordance with the manufacturer's recommendations but no less than 10 inches wide by 12 inches deep.

3.8 GROUNDING

A. Ground underground ducts and utility structures according to Section 260526 "Grounding and Bonding for Electrical Systems."

B. Install a 10' x ¾" copper clad steel ground rod in each manhole and handhole. Bond ground rod to grounding electrode in duct bank or duct counterpoise if provided. Bond ground rod to all metal parts inside the manhole or handhole.

3.9 FIELD QUALITY CONTROL

A. Perform the following tests and inspections and prepare test reports:

1. Demonstrate capability and compliance with requirements on completion of installation of underground ducts and utility structures.
2. Pull solid aluminum or wood test mandrel through duct to prove joint integrity and adequate bend radii, and test for out-of-round duct. Provide a minimum 6-inch-(150-mm-) long mandrel equal to 80 percent fill of duct. If obstructions are indicated, remove obstructions and retest.
3. Test manhole and handhole grounding to ensure electrical continuity of grounding and bonding connections. Measure and report ground resistance as specified in Section 260526 "Grounding and Bonding for Electrical Systems."

B. Correct deficiencies and retest as specified above to demonstrate compliance.

3.10 CLEANING

A. Pull leather-washer-type duct cleaner, with graduated washer sizes, through full length of ducts. Follow with rubber duct swab for final cleaning and to assist in spreading lubricant throughout ducts.

B. Clean internal surfaces of manholes, including sump. Remove foreign material.

END OF SECTION 260543

SECTION 260554 – SLEEVES AND SLEEVE SEALS FOR ELECTRICAL RACEWAYS AND CABLING

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:
1. Sleeves for raceway and cable penetration of non-fire-rated construction walls and floors.
2. Sleeve-seal systems.
3. Sleeve-seal fittings.
4. Grout.
5. Silicone sealants.

B. Related Requirements:
1. For penetration firestopping installed in fire-resistance-rated walls, horizontal assemblies, and smoke barriers, with and without penetrating items, use UL listed assemblies for the type and installation applied.

1.03 ACTION SUBMITTALS

A. Submit in accordance with Section 01300:
1. Product data: for each type of product

PART 2 – PRODUCTS

2.01 SLEEVES

A. Wall Sleeves:
1. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc coated, plain ends.

B. Sleeves for Conduits Penetrating Non-Fire-Rated Gypsum Board Assemblies: Galvanized-steel sheet; 0.0239-inch (0.6-mm) minimum thickness; round tube closed with welded longitudinal joint, with tabs for screw-fastening the sleeve to the board.

C. PVC-Pipe Sleeves: ASTM D 1785, Schedule 40. (For use with grounding electrode conductors only.)

D. Molded-PVC Sleeves: With nailing flange for attaching to wooden forms.

E. Molded-PE or -PP Sleeves: Removable, tapered-cup shaped, and smooth outer surface with nailing flange for attaching to wooden forms.

F. Sleeves for Rectangular Openings:
   1. Material: Galvanized sheet steel.
   2. Minimum Metal Thickness:
      a. For sleeve cross-section rectangle perimeter less than 50 inches (1270 mm) and with no side larger than 16 inches (400 mm), thickness shall be 0.052 inch (1.3 mm).
      b. For sleeve cross-section rectangle perimeter 50 inches (1270 mm) or more and one or more sides larger than 16 inches (400 mm), thickness shall be 0.138 inch (3.5 mm).

2.02 SLEEVE-SEAL SYSTEMS

A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Advance Products & Systems, Inc.
      b. CALPICO, Inc.
      c. Metraflex Company (The).
      d. Pipeline Seal and Insulator, Inc.
      e. Proco Products, Inc.
      f. or Approved Equal.
   2. Sealing Elements: EPDM rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
   3. Pressure Plates: Stainless steel.
   4. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements.

2.03 SLEEVE-SEAL FITTINGS

A. Description: Manufactured plastic, sleeve-type, waterstop assembly made for embedding in concrete slab or wall. Unit shall have plastic or rubber waterstop collar with center opening to match piping OD.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Presealed Systems.
      b. or Approved Equal.

2.04 GROUT

A. Description: Nonshrink; recommended for interior and exterior sealing openings in non-fire-rated walls or floors.

B. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.

C. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

2.05 SILICONE SEALANTS

A. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below.
   1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces that are not fire rated.

B. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

PART 3 – EXECUTION

3.01 SLEEVE INSTALLATION FOR NON-FIRE-RATED ELECTRICAL PENETRATIONS

A. Comply with NECA 1.

B. Comply with NEMA VE 2 for cable tray and cable penetrations.

C. Sleeves for Conduits Penetrating Above-Grade Non-Fire-Rated Concrete and Masonry-Unit Floors and Walls:
   1. Interior Penetrations of Non-Fire-Rated Walls and Floors:
      a. Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Section 07900 "Joint Sealants."
      b. Seal space outside of sleeves with mortar or grout. Pack sealing material solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect material while curing.
   2. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
   3. Size pipe sleeves to provide 1/4-inch (6.4-mm) annular clear space between sleeve and raceway or cable unless sleeve seal is to be installed or unless seismic criteria require different clearance.
   4. Install sleeves for wall penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of walls. Cut sleeves to length for mounting flush with both surfaces of walls. Deburr after cutting.
   5. Install sleeves for floor penetrations. Extend sleeves installed in floors 2 inches (50 mm) above finished floor level. Install sleeves during erection of floors.

D. Sleeves for Conduits Penetrating Non-Fire-Rated Gypsum Board Assemblies:
   1. Use circular metal sleeves unless penetration arrangement requires rectangular sleeved opening.
   2. Seal space outside of sleeves with approved joint compound for gypsum board assemblies.

E. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.

F. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.

G. Underground, Exterior-Wall and Floor Penetrations: Install steel pipe sleeves. Size sleeves to allow for 1-inch (25-mm) annular clear space between raceway or cable and sleeve for installing sleeve-seal system.

3.02 SLEEVE-SEAL-SYSTEM INSTALLATION

A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at raceway entries into building.

B. Install type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.03 SLEEVE-SEAL-FITTING INSTALLATION

A. Install sleeve-seal fittings in new walls and slabs as they are constructed.

B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position waterstop flange to be centered in concrete slab or wall.

C. Secure nailing flanges to concrete forms.

D. Using grout, seal the space around outside of sleeve-seal fittings.

END OF SECTION 260544

SECTION 260553 – IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Identification for raceway and metal-clad cable.
   2. Identification for conductors and communication and control cable.
   3. Underground-line warning tape.
   4. Warning labels and signs.
   5. Instruction signs.
   6. Equipment identification labels.
   7. Miscellaneous identification products.

1.3 SUBMITTALS

A. Product Data: For each electrical identification product indicated.

B. Identification Schedule: An index of nomenclature of electrical equipment and system components used in identification signs and labels.

C. Samples: For each type of label and sign to illustrate size, colors, lettering style, mounting provisions, and graphic features of identification products.

1.4 QUALITY ASSURANCE

A. Comply with ANSI A13.1, ANSI C2, and ANSI Z635.4.

B. Comply with NFPA 70.

C. Comply with 29 CFR 1910.145.

1.5 COORDINATION

A. Coordinate identification names, abbreviations, colors, and other features with requirements in the Contract Documents, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual, and with those required by

codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.

B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

C. Coordinate installation of identifying devices with location of access panels and doors.

D. Install identifying devices before installing acoustical ceilings and similar concealment.

E. Install all signs and labels horizontal (level) and consistent for similar equipment and panels.

PART 2 - PRODUCTS

2.1 RACEWAY AND METAL-CLAD CABLE IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.

B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

C. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeves, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

D. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; 2 inches wide; compounded for outdoor use.

2.2 CONDUCTOR AND COMMUNICATION- AND CONTROL-CABLE IDENTIFICATION MATERIALS

A. Aluminum Wraparound Marker Labels: Cut from 0.014-inch- thick aluminum sheet, with stamped, embossed, or scribed legend, and fitted with tabs and matching slots for permanently securing around wire or cable jacket or around groups of conductors.

2.3 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Cable Ties: Fungus-inert, self-extinguishing, 1-piece, self-locking, Type 6/6 nylon cable ties.
   1. Minimum Width: 3/16 inch.
   2. Tensile Strength: 50 lb., minimum.
   3. Temperature Range: Minus 40 to plus 185 deg F.
   4. Color: Black, except where used for color-coding.

B. Paint: Paint materials and application requirements are specified in Division 9 painting Sections.

PART 3 - EXECUTION

3.1 APPLICATION

A. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits More Than 30 A: Identify with snap-around label.
   1. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeves, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

B. Accessible Raceways and Cables of Auxiliary Systems: Identify the following systems with color-coded, snap-around, color-coding bands:
   1. Snap-Around Labels: Slit, pre-tensioned, flexible, preprinted, color-coded acrylic sleeves, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.
   2. Fire Alarm System: Red.
   3. Fire-Suppression Supervisory and Control System: Red and yellow.
   4. Combined Fire Alarm and Security System: Red and blue.
   5. Security System: Blue and yellow.
   6. Mechanical and Electrical Supervisory System: Green and blue.
   7. Telecommunication System: Green and yellow.
   8. Control Wiring: Green and red.

C. Power-Circuit Conductor Identification: For primary and secondary conductors No. 1/0 AWG and larger in vaults, pull and junction boxes, manholes, and hand holes use metal tags. Identify source and circuit number of each set of conductors. For single conductor cables, identify phase in addition to the above.
   1. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch, with stamped legend, punched for use with self-locking nylon tie fastener.

D. Branch-Circuit Conductor Identification: Where there are conductors for more than three branch circuits in same junction or pull box, use color-coding conductor tape. Identify each ungrounded conductor according to source and circuit number.
   1. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.

E. Conductor Color Code Identification: Where the premises wiring system has branch circuits supplied from more than one nominal voltage system, each ungrounded conductor of a given branch circuit shall be identified by color coded tape or cable insulation at all termination, connection or splice points.

F. Conductors to Be Extended in the Future: Attach write-on tags to conductors and list source and circuit number.
   1. Write-On Tags: Polyester tag, 0.015-inch-thick, with corrosion-resistant grommet and polyester or nylon tie for attachment to conductor or cable.

2. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.

G. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, signal, sound, intercommunications, voice, and data connections.
1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and Operation and Maintenance Manual.
4. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

H. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable. Install underground-line warning tape for both direct-buried cables and cables in raceway. During backfilling of trenches install continuous underground-line warning tape directly above line at 12 inches above duct. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches overall.
1. Description:
a. Permanent, bright-colored, continuous-printed, polyethylene tape.
b. Not less than 6 inches wide by 4 mils thick.
c. Compounded for permanent direct-burial service.
d. Embedded continuous metallic strip or core.
e. Printed legend shall indicate type of underground line.

I. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Comply with 29 CFR 1910.145 and apply self-adhesive warning labels. Identify system voltage with black letters on an orange background. Apply to exterior of door, cover, or other access.
1. Equipment with Multiple Power or Control Sources: Apply to door or cover of equipment including, but not limited to, the following:
a. Power transfer switches.
b. Controls with external control power connections. Equipment Requiring Workspace Clearance According to NFPA 70: Unless otherwise indicated, apply to door or cover of equipment but not on flush panelboards and similar equipment in finished spaces.
2. Comply with NFPA 70 and 29 CFR 1910.145.
3. Self-Adhesive Warning Labels: Factory printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment, unless otherwise indicated.
4. Baked-Enamel Warning Signs: Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application. 1/4-inch grommets in corners for mounting. Nominal size, 7 by 10 inches.
5. Metal-Backed, Butyrate Warning Signs: Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch galvanized-steel backing; and with colors, legend, and size required for application. 1/4-inch grommets in corners for mounting. Nominal size, 10 by 14 inches.
6. Warning label and sign shall include, but are not limited to, the following legends:

a. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
b. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."

J. Instruction Signs:
1. Operating Instructions: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with ENGINEER/OWNER APPROVED instructions where needed for system or equipment operation. Instructions are needed for all equipment unless otherwise noted.
a. Signs shall be engraved, laminated acrylic or melamine plastic, minimum 1/16-inch-thick for signs up to 20 sq. in. and 1/8-inch-thick for larger sizes.
b. The engraved legend shall be ½ “White letters on Brown face and punched or drilled for mechanical fasteners.
c. The signs shall be installed with stainless hardware.

2. Emergency Operating Instructions: Install emergency operating instruction signs at equipment used for power transfer, safety shutdown, or any other locations requiring operation in an emergency.
a. Signs shall be engraved, laminated acrylic or melamine plastic, minimum 1/16-inch-thick for signs up to 20 sq. in. and 1/8-inch-thick for larger sizes.
b. The engraved legend shall be ½ “White letters on Red face and punched or drilled for mechanical fasteners.
c. The signs shall be installed with stainless hardware.

K. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
1. Labeling Instructions:
a. Indoor and Outdoor Equipment: Use engraved, laminated acrylic or melamine labels, punched or drilled for screw mounting. Identification labels shall have white letters on a dark-gray background. Unless otherwise indicated, provide a single line of text with 1/2-inch- high letters on 1-1/2-inch- high label; where 2 lines of text are required, use labels 2 inches high. Mount labels with stainless hardware.
b. Elevated Components: Increase the size of the labels and letters to those appropriate for viewing from the floor.
2. Equipment to Be Labeled:
a. Identification labeling of some items listed below may be required by individual Sections or by NFPA 70.
b. Panelboards, electrical cabinets, and enclosures.
c. Access doors and panels for concealed electrical items.
d. Electrical switchgear and switchboards.
e. Transformers.

f. Electrical substations.
g. Emergency system boxes and enclosures.
h. Motor-control centers.
i. Disconnect switches.
j. Enclosed circuit breakers.
k. Motor starters.
l. Push-button stations.
m. Power transfer equipment.
n. Contactors.
o. Battery inverter units.
p. Battery racks.
q. Power-generating units.
r. Voice and data cable terminal equipment.
s. Television/audio components, racks, and controls.
t. Fire-alarm control panel and annunciators.
u. Security and intrusion-detection control stations, control panels, terminal cabinets, and racks.
v. Monitoring and control equipment.
w. Uninterruptible power supply equipment.
x. Terminals, racks, and patch panels for voice and data communication and for signal and control functions.
y. Control systems
z. Field mounted control devices
aa. Field mounted instruments

3.2 INSTALLATION PRACTICES

A. Verify identity of each item before installing identification products.

B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

C. Attach non-adhesive signs and plastic labels with screws and auxiliary hardware appropriate to the location and substrate.

D. Color-Coding for Phase and Voltage Level Identification, 600 V and Less: Use the colors listed below for ungrounded service, feeder, and branch-circuit conductors.
1. Color shall be factory applied or, for sizes LARGER than No. 10 AWG if authorities having jurisdiction permit, field applied.
2. Colors for 208/120-V Circuits:
   a. Phase A: Black.
   b. Phase B: Red.
   c. Phase C: Blue.
3. Colors for 480/277-V Circuits:
   a. Phase A: Brown.
   b. Phase B: Orange.
   c. Phase C: Yellow.
4. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or

taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.

5. Where the premises wiring system has branch circuits supplied from more than one nominal voltage system, the color codes used to identify each phase, neutral (if applicable) and ground conductor throughout the system shall be permanently posted at each branch-circuit panelboard or similar branch-circuit distribution equipment. Provide factory printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment, unless otherwise indicated.

E. Aluminum Wraparound Marker Labels and Metal Tags: Secure tight to surface of conductor or cable at a location with high visibility and accessibility.

F. Painted Identification: Prepare surface and apply paint according to Division 9 painting Sections.

END OF SECTION 260553

SECTION 260574 - OVERCURRENT PROTECTIVE DEVICE ARC-FLASH STUDY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

SUMMARY

B. Section includes a computer-based, arc-flash study to determine the arc-flash hazard distance and the incident energy to which personnel could be exposed during work on or near electrical equipment. The study shall include the entire electrical system (both existing and proposed) for the facility.

1.2 DEFINITIONS

A. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

B. One-Line Diagram: A diagram which shows, by means of single lines and graphic symbols, the course of an electric circuit or system of circuits and the component devices or parts used therein.

C. Protective Device: A device that senses when an abnormal current flow exists and then removes the affected portion from the system.

D. SCCR: Short-circuit current rating.

E. Service: The conductors and equipment for delivering electric energy from the serving utility to the wiring system of the premises served.

1.3 ACTION SUBMITTALS

A. Product Data: For computer software program to be used for studies.

B. Other Action Submittals: Submit the following submittals after the approval of system protective devices submittals Submit three signed and sealed reports and 1 complete electronic copy including all computer files.

1. Arc-flash study input data, including completed computer program input data sheets.
2. Arc-flash study report; signed, dated, and sealed by a qualified professional engineer.

a. Submit study report for action prior to receiving final approval of the distribution equipment submittals. If formal completion of studies will cause delay in equipment manufacturing, obtain approval from Architect for preliminary submittal of sufficient study data to ensure that the selection of devices and associated characteristics is satisfactory.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: Professional Engineer

B. Product Certificates: For arc-flash hazard analysis software, certifying compliance with IEEE 1584 and NFPA 70E or CSA Z462-12(2012).

1.5 CLOSEOUT SUBMITTALS

A. Maintenance procedures according to requirements in NFPA 70E shall be provided in the equipment manuals.

B. Operation and Maintenance Procedures: In addition to items specified in Section 017823 "Operation and Maintenance Data," provide maintenance procedures for use by Owner's personnel that comply with requirements in NFPA 70E.

1.6 QUALITY ASSURANCE

A. Studies shall use computer programs that are distributed nationally and are in wide use. Software algorithms shall comply with requirements of standards and guides specified in this Section. Manual calculations are unacceptable.

B. Arc-Flash Study Software Developer Qualifications: An entity that owns and markets computer software used for studies, having performed successful studies of similar magnitude on electrical distribution systems using similar devices.

1. The computer program shall be developed under the charge of a licensed professional engineer who holds IEEE Computer Society's Certified Software Development Professional certification.

C. Arc-Flash Study Specialist Qualifications: Professional engineer in charge of performing the study, analyzing the arc flash, and documenting recommendations, licensed in the state where Project is located. All elements of the study shall be performed under the direct supervision and control of this professional engineer.

PART 2 - PRODUCTS

2.1 COMPUTER SOFTWARE DEVELOPERS

A. Software Developers: Subject to compliance with requirements, provide software by one of the following:

1. Operation Technology, Inc. (ETAP)
2. SKM Systems Analysis, Inc. (Power Tools for Windows)

B. Comply with IEEE 1584 and NFPA 70E.

C. Analytical features of device coordination study computer software program shall have the capability to calculate "mandatory," "very desirable," and "desirable" features as listed in IEEE 399.

2.2 SHORT-CIRCUIT STUDY REPORT CONTENT

A. Executive summary.

B. Study descriptions, purpose, basis and scope.

C. One-line diagram, showing the following:

1. Protective device designations and ampere ratings.
2. Cable size and lengths.
3. Transformer kilovolt ampere (kVA) and voltage ratings.
4. Motor and generator designations and kVA ratings.
5. Switchgear, switchboard, motor-control center and panelboard designations.

D. Study Input Data: As described in "Power System Data" Article.

E. Short-Circuit Study Output:

1. Interrupting Duty Report: Three-phase and unbalanced fault calculations, showing the following for each overcurrent device location:

a. Voltage.
b. Calculated symmetrical fault-current magnitude and angle.
c. Fault-point X/R ratio.
d. No AC Decrement (NACD) ratio.
e. Equivalent impedance.
f. Multiplying factors for 2-, 3-, 5-, and 8-cycle circuit breakers rated on a symmetrical basis.
g. Multiplying factors for 2-, 3-, 5-, and 8-cycle circuit breakers rated on a total basis.

F. Incident Energy and Flash Protection Boundary Calculations:

1. Arcing fault magnitude.
2. Protective device clearing time.
3. Duration of arc.
4. Arc-flash boundary.
5. Working distance.
6. Incident energy.
7. Hazard risk category.
8. Recommendations for arc-flash energy reduction.

G. Fault study input data, case descriptions, and fault-current calculations including a definition of terms and guide for interpretation of the computer printout.

2.3 ARC-FLASH WARNING LABELS

A. Comply with requirements in Section 260553 "Identification for Electrical Systems." Produce a 3.5-by-5-inch (76-by-127-mm) thermal transfer label of high-adhesion polyester for each work location included in the analysis.

B. The label shall have an orange header with the wording, "WARNING, ARC-FLASH HAZARD," and shall include the following information taken directly from the arc-flash hazard analysis:

1. Location designation.
2. Nominal voltage.
3. Flash protection boundary.
4. Hazard risk category.
5. Incident energy.
6. Working distance.
7. Engineering report number, revision number, and issue date.

C. Labels shall be machine printed, with no field-applied markings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine Project overcurrent protective device submittals. Proceed with arc-flash study only after relevant equipment submittals have been assembled. Overcurrent protective devices that have not been submitted and approved prior to arc-flash study may not be used in study.

3.2 SHORT-CIRCUIT STUDY

A. Perform study following the general study procedures contained in IEEE 399.

B. Calculate short-circuit currents according to IEEE 551.

C. Base study on the device characteristics supplied by device manufacturer.
1. The entire electrical system both new and old shall be included in the study.

D. Study electrical distribution system from normal and alternate power sources throughout electrical distribution system for Project. Include studies of system-switching configurations and alternate operations that could result in maximum fault conditions.

E. The calculations shall include the ac fault-current decay from induction motors, synchronous motors, and asynchronous generators and shall apply to low- and medium-voltage, ac systems.

F. Calculate short-circuit momentary and interrupting duties for a three-phase bolted fault and single line-to-ground fault at each of the following:

1. Electric utility's supply termination point.
2. Switchgear.
3. Unit substation primary and secondary terminals.
4. Low-voltage switchgear.
5. Motor-control centers.
6. Standby generators and automatic transfer switches.
7. Branch circuit panelboards.

3.3 PROTECTIVE DEVICE COORDINATION STUDY

A. Perform coordination study using approved computer software program. Prepare a written report using results of fault-current study. Comply with IEEE 399.

1. Calculate the maximum and minimum 1/2-cycle short-circuit currents.
2. Calculate the maximum and minimum interrupting duty (5 cycles to 2 seconds) short-circuit currents.
3. Calculate the maximum and minimum ground-fault currents.

B. Comply with IEEE 141 and IEEE 242 recommendations for fault currents and time intervals. (Comply with NEC for selective coordination NFPA 70; 240.12, 700.27, 701.18)

C. Transformer Primary Overcurrent Protective Devices:

1. Device shall not operate in response to the following:
    a. Inrush current when first energized.
    b. Self-cooled, full-load current or forced-air-cooled, full-load current, whichever is specified for that transformer.
    c. Permissible transformer overloads according to IEEE C57.96 if required by unusual loading or emergency conditions.
2. Device settings shall protect transformers according to IEEE C57.12.00, for fault currents.

D. Motors served by voltages more than 600 V shall be protected according to IEEE 620.

E. Conductor Protection: Protect cables against damage from fault currents according to ICEA P-32-382, ICEA P-45-482, and conductor melting curves in IEEE 242. Demonstrate that equipment withstands the maximum short-circuit current for a time equivalent to the tripping time of the primary relay protection or total clearing time of the fuse. To determine temperatures that damage insulation, use curves from cable manufacturers or from listed standards indicating conductor size and short-circuit current.

F. Coordination-Study Report: Prepare a written report indicating the following results of coordination study:

1. Tabular Format of Settings Selected for Overcurrent Protective Devices:

   a. Device tag.
   b. Relay-current transformer ratios; and tap, time-dial, and instantaneous-pickup values.
   c. Circuit-breaker sensor rating; and long-time, short-time, and instantaneous settings.
   d. Fuse-current rating and type.
   e. Ground-fault relay-pickup and time-delay settings.

2. Coordination Curves: Prepared to determine settings of overcurrent protective devices to achieve selective coordination. Graphically illustrate that adequate time separation exists between devices installed in series, including power utility company's upstream devices. Prepare separate sets of curves for the switching schemes and for emergency periods where the power source is local generation. Show the following information:

   a. Device tag.
   b. Voltage and current ratio for curves.
   c. Three-phase and single-phase damage points for each transformer.
   d. No damage, melting, and clearing curves for fuses.
   e. Cable damage curves.
   f. Transformer inrush points.
   g. Maximum fault-current cutoff point.

G. Provide completed data sheets for setting of overcurrent protective devices bound in a 3-ring binder.

3.4 ARC-FLASH HAZARD ANALYSIS

A. Comply with NFPA 70E and its Annex D for hazard analysis study.

B. Use the short-circuit study output and the field-verified settings of the overcurrent devices.

C. Calculate maximum and minimum contributions of fault-current size.

1. The minimum calculation shall assume that the contribution from all sources is at a minimum and shall assume no motor load.
2. The maximum calculation shall assume a maximum contribution from all sources and shall assume motors to be operating under full-load conditions.

D. Calculate the arc-flash protection boundary and incident energy at locations in the electrical distribution system where personnel could perform work on energized parts.

E. Include medium- and low-voltage equipment locations. Safe working distances shall be specified for calculated fault locations based on the calculated arc-flash boundary, considering incident energy of 1.2 cal/sq.cm.

F. Incident energy calculations shall consider the accumulation of energy over time when performing arc-flash calculations on buses with multiple sources. Iterative calculations shall take into account the changing current contributions, as the sources are interrupted or decremented with time. Fault contribution from motors and generators shall be decremented as follows:

1. Fault contribution from induction motors should not be considered beyond three to five cycles.
2. Fault contribution from synchronous motors and generators should be decayed to match the actual decrement of each as closely as possible (e.g., contributions from permanent magnet generators will typically decay from 10 per unit to three per unit after 10 cycles).

G. Arc-flash computation shall include both line and load side of a circuit breaker as follows:

1. When the circuit breaker is in a separate enclosure.
2. When the line terminals of the circuit breaker are separate from the work location.

H. Base arc-flash calculations on actual overcurrent protective device clearing time. Cap maximum clearing time at two seconds based on IEEE 1584, Section B.1.2.

3.5 POWER SYSTEM DATA

A. Obtain all data necessary for the conduct of the arc-flash hazard analysis.

1. Verify completeness of data supplied on the one-line diagram on Drawings. Call discrepancies to the attention of Architect.
2. For new equipment, use characteristics submitted under the provisions of action submittals and information submittals for this Project.
3. For existing equipment, whether or not relocated, obtain required electrical distribution system data by field investigation and surveys, conducted by qualified technicians and engineers.

B. Gather and tabulate the following input data to support coordination study. Comply with recommendations in IEEE 1584 and NFPA 70E as to the amount of detail that is required to be acquired in the field. Field data gathering shall be under the direct supervision and control of the engineer in charge of performing the study.

1. Product Data for overcurrent protective devices specified in other Sections and involved in overcurrent protective device coordination studies. Use equipment designation tags that are consistent with electrical distribution system diagrams, overcurrent protective device submittals, input and output data, and recommended device settings.
2. Obtain electrical power utility impedance at the service.
3. Power sources and ties.
4. For transformers, include kVA, primary and secondary voltages, connection type, impedance, X/R ratio, taps measured in per cent, and phase shift.

5. For reactors, provide manufacturer and model designation, voltage rating and impedance.
6. For circuit breakers and fuses, provide manufacturer and model designation. List type of breaker, type of trip and available range of settings, SCCR, current rating, and breaker settings.
7. Generator short-circuit current contribution data, including short-circuit reactance, rated kVA, rated voltage, and X/R ratio.
8. For relays, provide manufacturer and model designation, current transformer ratios, potential transformer ratios, and relay settings.
9. Busway manufacturer and model designation, current rating, impedance, lengths, and conductor material.
10. Motor horsepower and NEMA MG 1 code letter designation.
11. Low-voltage cable sizes, lengths, number, conductor material and conduit material (magnetic or nonmagnetic).
12. Medium-voltage cable sizes, lengths, conductor material, and cable construction and metallic shield performance parameters.

3.6 LABELING

A. Apply one arc-flash label for 600-V ac, 480-V ac, and applicable 208-V ac panelboards and disconnects and for each of the following locations:

1. Motor-control center.
2. Low-voltage switchboard.
3. Switchgear.
4. Medium-voltage switch.
5. Control panel.

3.7 APPLICATION OF WARNING LABELS

A. Install the arc-fault warning labels under the direct supervision and control of the Arc-Flash Study Specialist.

3.8 DEMONSTRATION

A. Engage the Arc-Flash Study Specialist to train Owner's maintenance personnel in the potential arc-flash hazards associated with working on energized equipment and the significance of the arc-flash warning labels.

END OF SECTION 260574

SECTION 260800 – COMMISSIONING OF ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Requirements for the CONTRACTOR to provide commissioning and installation services.

B. Requirements for the CONTRACTOR to provide labor, materials, tools, and testing equipment to commission controls, networking, and communications related equipment and systems.

C. Requirements for the CONTRACTOR to perform associated testing of electrical systems, wiring, equipment, and grounding.

1.03 CITED STANDARDS

A. National Fire Protection Association (NFPA):
   1. 70, National Electrical Code (NEC)
   2. 70E Standard for Electrical Safety in the Workplace 2012

B. The Institute of Electrical and Electronics Engineers (IEEE)

C. International Society of Automation (ISA)

1.04 NOTED RESTRICTIONS

A. Commissioning of any system shall not begin until permission is granted by the ENGINEER and OWNER.

B. Comply with NFPA 70E.

C. The OWNER shall have the option to witness and participate in the entire commissioning and integration process.

1.05 QUALITY CONTROL

A. The Integrator shall submit weekly and monthly commissioning progress reports to the ENGINEER. The report formats shall be developed by the Integrator.

B. Test Equipment Traceability:
   1. The Integrator shall have a calibration program which maintains applicable test instrumentation and equipment within rated accuracy and within their calibration time limits.
   2. Equipment and instruments used to evaluate electrical performance shall be calibrated to a secondary standard traceable to the National Institute of Standards and Technology (NIST).
   3. Test equipment operating instructions and procedures shall be with the test equipment.
   4. A copy of test equipment calibration certificate or calibration sticker must be with equipment at all times to be available for inspection.

1.06 SUBMITTALS

A. The following submittals shall be made during commissioning:
   1. Progress reports

B. A commissioning report shall be submitted upon the completion of commissioning activities to notify the OWNER and ENGINEER of the milestone and the readiness for Site Acceptance Testing (SAT). The commissioning report shall include, but not be limited to, the following:
   1. Completed commissioning checklists
   2. Completed punch lists
   3. Calibration data sheets
   4. Drawings and manuals
   5. Training

PART 2 – PRODUCTS

2.01 GENERAL

A. Where equipment is to be retained but rewired that equipment and associated wiring shall be subjected to testing new equipment and wiring procedures.

B. The start-up service personnel must follow job site electrical safety requirements, installation standards and electrical testing standards. Adhere to OSHA safety practices for the entirety of commissioning.

C. OWNER designated representatives may witness all integrated system commissioning activities.

D. In addition to the requirements of this section, the installation and commissioning will comply with all applicable requirements of the RFP.

2.02 PRODUCT NAME

A. A partial list of systems and equipment to be commissioned shall include but not limited to:
   1. Panel devices
   2. All modifications and associated devices
   3. PLC
   4. OIT
   5. Communication equipment
   6. Remote Access for pump station monitoring data
   7. Graphic Displays in OIT

PART 3 – EXECUTION

3.01 GENERAL

A. The commissioning and installation shall be considered complete by the ENGINEER upon successful installation of control equipment and execution of the commissioning requirements listed herein. The Integrator shall be granted permission to begin the Site Acceptance Testing.

B. CONTRACTOR shall be responsible for any damage to equipment or material due to improper testing or commissioning and shall replace or restore to original condition any damaged equipment or material.

C. All systems, equipment, and rooms shall be commissioned in a complete manner as possible to ensure a complete working control system, network and communication system.

D. The intent of commissioning is to start-up equipment or systems and prepare them for performance site acceptance testing. Care should be taken to ensure continuous and reliable operation of the booster pumping station systems at all times.

E. Commissioning of all systems listed to include but not be limited to:
   1. All wire, cable, equipment, and systems installed or connected under control systems upgrade contract shall be tested to assure proper installation, setting, connection, and functioning in accordance with the drawings, specifications, and the manufacturer's recommendations. The intent herein is that field testing be extensive and complete as specified, to provide assurance of correct installation and operation of equipment.
   2. All tests and inspections recommended by the equipment manufacturer shall be included, whether required by these specifications or not, unless specifically waived in writing by the ENGINEER.

3.02 COMMISSIONING AND SYSTEM INTEGRATION

A. Commissioning shall be performed with all inter-related systems operating. In general, integrated system commissioning shall be operated through all modes of

operation (normal, emergency, interruption to the incoming services, manual operations). Verification of each mode in the sequences of operation is required.

B. If a problem is detected while conducting commissioning, the problem will be identified and reported to the CONTRACTOR for diagnosis and correction. The failed portion shall be repeated after the repairs are completed.

C. A combination punch list/checklist shall be maintained by the Integrator in spreadsheet format to monitor and track equipment commissioning and installation. The spreadsheet shall be an integral part of the weekly report documentation and must be included with final report.

3.03 CERTIFICATION

A. Notification of Completion of Work
   1. Prior to acceptance of Work, the OWNER shall request from the CONTRACTOR a written notification certifying that:
      a. Work has been completed in accordance with Contract Documents.
      b. Work has been inspected for compliance with Contract Documents.
      c. Work is ready for final inspection and site acceptance testing.

B. Final Walk-Thru
   1. After receipt of the notification of completion of work, the ENGINEER or Project Manager will conduct a final walk-thru with the participation of the OWNER, CONTRACTOR, ENGINEER and other appropriate project team members to verify the status of the completion

C. Final Punch List
   1. Should the ENGINEER consider that the Work is incomplete or defective:
      a. The OWNER will notify the CONTRACTOR in writing, by form of a final punch list, listing the incomplete or defective Work.
      b. The CONTRACTOR will take immediate steps to remedy the stated deficiencies and send a second or subsequent written certification to the ENGINEER stating that the Work is complete.
      c. The ENGINEER or Project Manager will re-inspect the Work.
   2. Upon satisfaction that all the work is complete and all items in the Final Punch List addressed to the satisfaction of the ENGINEER, the OWNER and CONTRACTOR will sign-off on the final punch list indicating concurrence that the work is complete.

D. Manuals and Records
   1. After final walk-thru and sign-off on the final punch list have been achieved the CONTRACTOR releases to the OWNER the following manuals and records kept, updated and/or developed during the project:
   2. Final documentation as specified in Section 16900.
   3. Training session forms.
   4. Copies of all punch lists.

3.04 TRAINING

A. After the completion of commissioning and installation, designated OWNER personnel shall be trained in the operation and maintenance of all equipment and systems related to the project.

B. Training shall consist of a formal one (1) day session wherein all procedures necessary to operate and maintain equipment and systems on a continuing basis are explained in full detail. Hands-on operations and maintenance tasks shall be executed to ensure that all aspects of the training are fully understood.

C. Training shall be conducted on-site by the CSI and shall be offered to accommodate up to twelve (12) persons.

D. Training times shall be determined and coordinated by the OWNER.

END OF SECTION 260800

SECTION 262416 – PANELBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Distribution panelboards.
2. Lighting and appliance branch-circuit panelboards.
3. Electronic-grade panelboards.

1.3 DEFINITIONS

A. SVR: Suppressed voltage rating.

B. SPD: Surge Protection Device

1.4 ACTION SUBMITTALS

A. Product Data: For each type of panelboard, switching and overcurrent protective device, transient voltage suppression device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

B. Shop Drawings: For each panelboard and related equipment.

1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
2. Detail enclosure types and details for types other than NEMA 250, Type 1.
3. Detail bus configuration, current, and voltage ratings.
4. Short-circuit current rating of panelboards and overcurrent protective devices.
5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
6. Include wiring diagrams for power, signal, and control wiring.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Seismic Qualification Certificates: Submit certification that panelboards, overcurrent protective devices, accessories, and components will withstand seismic forces defined in Section 260548.16 "Seismic Controls for Electrical Systems." Include the following:

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

C. Field Quality-Control Reports:

1. Test procedures used.
2. Test results that comply with requirements.
3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

D. Panelboard Schedules: For installation in panelboards. Submit final versions after load balancing indicating the connected load for each breaker in accordance with the NEC. Schedule to be typed and dated.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For panelboards and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:

1. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.
2. Time-current curves, including selectable ranges for each type of overcurrent protective device that allows adjustments.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Keys: Two spares for each type of panelboard cabinet lock.
2. Circuit Breakers Including GFCI and Ground Fault Equipment Protection (GFEP) Types: Provide spare breakers as shown in the schedules on the drawings
3. Fuses for Fused Switches: Equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.
4. Fuses for Fused Power-Circuit Devices: Equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.

1.8 QUALITY ASSURANCE

A. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.

B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for panelboards including clearances between panelboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Comply with NEMA PB 1.

E. Comply with NFPA 70.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Store in accordance with the manufacturer's recommendations.

B. Handle and prepare panelboards for installation according to NEMA PB 1.

1.10 PROJECT CONDITIONS

A. Environmental Limitations:

1. Do not deliver or install panelboards until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above panelboards is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
2. Rate equipment for continuous operation under the following conditions unless otherwise indicated:

    a. Ambient Temperature: Not exceeding minus 22 deg F (minus 30 deg C) to plus 104 deg F (plus 40 deg C).
    b. Altitude: Not exceeding 6600 feet (2000 m).

B. Service Conditions: NEMA PB 1, usual service conditions, as follows:

1. Ambient temperatures within limits specified.
2. Altitude not exceeding 6600 feet (2000 m).

C. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:

1. Notify Engineer and Owner no fewer than 10 working days in advance of proposed interruption of electric service.

2. Do not proceed with interruption of electric service without Engineer and Owner's written permission.
3. Comply with NFPA 70E.

1.11 COORDINATION

A. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

B. Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.

1.12 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transient voltage suppression devices that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PANELBOARDS

A. Fabricate and test panelboards according to IEEE 344 to withstand seismic forces defined in Section 260548.16 "Seismic Controls for Electrical Systems."

B. Enclosures: See Plan Sheet Panel Schedule for Enclosure Types and Mounting.

1. Provide rated enclosures as shown below unless otherwise indicated on plans:

a. Indoor Dry and Clean Locations: NEMA 250, Type 1.

b. Indoor Damp or Wet Locations: NEMA 250, Type 4X.
c. Indoor Corrosive Locations: NEMA 250, Type 4X Fiberglass
d. Outdoor Locations: NEMA 250, Type 4X
e. Wash-Down Areas: NEMA 250, Type 4X 316 stainless steel
f. Other Wet or Damp Indoor Locations: NEMA 250, Type 4X.
g. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 12.
h. For conditions not addressed above, provide rated enclosures for environmental conditions at installed locations.

2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.
3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.
4. Skirt for Surface-Mounted Panelboards: Same gage and finish as panelboard front with flanges for attachment to panelboard, wall, and ceiling or floor.
5. Gutter Extension and Barrier: Same gage and finish as panelboard enclosure; integral with enclosure body. Arrange to isolate individual panel sections.
6. Finishes:

    a. Panels and Trim: Steel, factory finished immediately after cleaning and pretreating with manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.
    b. Back Boxes: Galvanized steel unless indicated otherwise on panel schedule.
    c. Fungus Proofing: Permanent fungicidal treatment for overcurrent protective devices and other components. (Only required with the relative humidity is above 90% and the electrical room or space is not conditioned.)

7. Directory Card: Inside panelboard door, mounted in transparent card holder. All breaker text to be typed and dated. Directory card shall include the source of supply to the panelboard Directory card shall include typed contact information for the electrical contractor

C. Incoming Mains Location: Top or bottom per contractors installation method unless specifically indicated on the drawings.

D. Phase, Neutral, and Ground Buses:

1. Material: Hard-drawn copper, 98 percent conductivity.
2. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment grounding conductors; bonded to box.
3. Isolated Ground Bus: Adequate for branch-circuit isolated ground conductors; insulated from box.
4. Neutral Bus: 100% of the phase bus capacity unless otherwise indicated.
5. Extra-Capacity Neutral Bus (when shown on the drawings): Neutral bus rated 200 percent of phase bus and UL listed as suitable for nonlinear loads.
6. Split Bus: Vertical buses divided into individual vertical sections.

E. Conductor Connectors: Suitable for use with conductor material and sizes.

1. Material: Hard-drawn copper, 98 percent conductivity.
2. Main and Neutral Lugs Mechanical type.
3. Ground Lugs and Bus-Configured Terminators: Mechanical type.
4. Feed-Through Lugs: Mechanical type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
5. Sub feed (Double) Lugs: Mechanical type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.
6. Gutter-Tap Lugs: Mechanical type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.

7. Extra-Capacity Neutral Lugs: Rated 200 percent of phase lugs mounted on extra-capacity neutral bus.

F. Service Equipment Label: NRTL labeled for use as service equipment for panelboards with one or more main service disconnecting and overcurrent protective devices.

G. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.

H. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.2 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Panelboards shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."

B. Surge Suppression: Factory installed as an integral part of indicated panelboards, complying with UL 1449 SPD Type 2]. Provide SPD devices per section 264313 of the project documents.

2.3 DISTRIBUTION PANELBOARDS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. Panelboards: NEMA PB 1, power and feeder distribution type.

C. Doors: Secured with vault-type latch with tumbler lock; keyed alike.

1. For doors more than 36 inches (914 mm) high, provide two latches, keyed alike.

D. Mains: As shown on the drawings

E. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes 125 A and Smaller: Bolt-on circuit breakers.

F. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes Larger Than 125 A: Bolt-on circuit breakers; plug-in circuit breakers where individual positive-locking device requires mechanical release for removal.

G. Branch Overcurrent Protective Devices: Fused switches.

2.4 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.

C. Mains as shown on the drawings

D. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.

E. Doors: Provide Door-in-Door Construction with concealed hinges; secured with flush latch with tumbler lock; keyed alike.

F. Column-Type Panelboards: Narrow gutter extension, with cover, to overhead junction box equipped with ground and neutral terminal buses.

2.5 ELECTRONIC-GRADE PANELBOARDS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Current Technology; a subsidiary of Danahar Corporation.
2. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
3. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
4. Liebert Corporation.
5. Siemens Energy & Automation, Inc.
6. Square D; a brand of Schneider Electric.
7.

B. Panelboards: NEMA PB 1; with factory-installed, integral SPD; labeled by an NRTL for compliance with UL 67 after installing SPD.

C. Doors: Provide Door-in-Door Construction with Secured with vault-type latch with tumbler lock; keyed alike.

D. Main Overcurrent Protective Devices: Bolt-on thermal-magnetic circuit breakers.

E. Branch Overcurrent Protective Devices: Bolt-on thermal-magnetic circuit breakers.

F. Buses:

1. Copper phase and neutral buses; 200 percent capacity neutral bus and lugs.
2. Copper equipment and isolated ground buses.

2.6 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.
5. >.

B. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.

1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
2. Electronic trip circuit breakers with rms sensing; field-replaceable rating plug or field-replicable electronic trip; and the following field-adjustable settings:

    a. Instantaneous trip.
    b. Long- and short-time pickup levels.
    c. Long- and short-time time adjustments.
    d. Ground-fault pickup level, time delay, and I squared x t response.

3. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller; let-through ratings less than NEMA FU 1, RK-5.
4. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).
5. Ground-Fault Equipment Protection (GFEP) Circuit Breakers: Class B ground-fault protection (30-mA trip).
6. Arc-Fault Circuit Interrupter (AFCI) Circuit Breakers: Comply with UL 1699; 120/240-V, single-pole configuration.
7. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:

    a. Standard frame sizes, trip ratings, and number of poles.
    b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.
    c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.
    d. Ground-Fault Protection: Integrally mounted or Remote-mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
    e. Communication Capability: as shown on the controls drawings when specifically indicated.
    f. Shunt Trip: as shown on the drawings.

g. Undervoltage Trip, as shown on the drawings.
h. Auxiliary Contacts: Where shown on the drawings, two SPDT switches with "a" and "b" contacts; "a" contacts mimic circuit-breaker contacts and "b" contacts operate in reverse of circuit-breaker contacts.
i. Alarm Switch: Where shown on the drawings, single-pole, normally open contact that actuates only when circuit breaker trips.
j. Key Interlock Kit: Where shown on the drawings, externally mounted to prohibit circuit-breaker operation; key shall be removable only when circuit breaker is in off position.
k. Zone-Selective Interlocking: Where shown on the drawings, integral with electronic trip unit; for interlocking ground-fault protection function with other upstream or downstream devices.
l. Multipole units enclosed in a single housing or factory assembled to operate as a single unit.
m. Handle Padlocking Device: Fixed attachment, for locking circuit-breaker handle in off position.
n. Handle Clamp: Loose attachment, for holding circuit-breaker handle in on position.

C. Fused Switch: NEMA KS 1, Type HD; clips to accommodate specified fuses; lockable handle.

1. Fuses, and Spare-Fuse Cabinet: Comply with requirements specified in Section 262813 "Fuses."
2. Fused Switch Features and Accessories: Standard ampere ratings and number of poles.
3. Auxiliary Contacts: When shown on the drawings provide Two normally open and normally closed contact(s) that operate with switch handle operation.

2.7 ACCESSORY COMPONENTS AND FEATURES (if call for on the contract drawings)

A. Accessory Set: Include tools and miscellaneous items required for overcurrent protective device test, inspection, maintenance, and operation.

B. Portable Test Set: For testing functions of solid-state trip devices without removing from panelboard. Include relay and meter test plugs suitable for testing panelboard meters and switchboard class relays.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Receive, inspect, handle, and store panelboards according to NEMA PB 1.1.

B. Examine panelboards before installation. Reject panelboards that are damaged or rusted or have been subjected to water saturation.

C. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install panelboards and accessories according to NEMA PB 1.1.

B. Equipment Mounting:

C. Floor Mounted panelboards on concrete bases, 4-inch (100-mm) nominal thickness. Comply with requirements for concrete in the project specifications. If no concrete is specified use 3000 psi.
   a. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around full perimeter of base.
   b. For panelboards, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
   c. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
   d. Install anchor bolts to elevations required for proper attachment to panelboards.
   e. Attach panelboard to the vertical finished or structural surface behind the panelboard.
   2. Wall/Rack Mounted:
      a. Mount to wall/rack using unistrut with bolts/mounting hardware approved by the structural engineer or architect.

D. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from panelboards.

E. Comply with mounting and anchoring requirements specified in Section 260548.16 "Seismic Controls for Electrical Systems."

F. Mount panelboards such that the highest operator is less than 78” above finished floor.

G. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.

H. Install overcurrent protective devices and controllers not already factory installed.

   1. Set field-adjustable, circuit-breaker trip ranges.

I. Install filler plates in unused spaces.

J. Stub a minimum of four 1-inch (27-GRC) empty conduits but not less than 25% of the combined cross-sectional area of the all other live conduit from panelboard into accessible ceiling space or space designated to be ceiling space in the future. Stub a

minimum of four 1-inch (27-GRC) empty conduits but not less than 25% of the combined cross-sectional area of the all other live conduit into raised floor space or below slab not on grade. This is for recessed panelboards only.

K. Arrange conductors in gutters into groups and bundle and wrap with wire ties after completing load balancing.

L. Comply with NECA 1.

3.3 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Section 260553 "Identification for Electrical Systems."

B. Create a directory to indicate installed circuit loads after balancing panelboard loads; incorporate Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.

C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

D. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

B. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

C. Acceptance Testing Preparation:

1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

D. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

3. Perform the following infrared scan tests and inspections and prepare reports:

    a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each panelboard. Remove front panels so joints and connections are accessible to portable scanner.
    b. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each panelboard 11 months after date of Substantial Completion.
    c. Instruments and Equipment:

        1) Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.

E. Panelboards will be considered defective if they do not pass tests and inspections.

F. Prepare test and inspection reports, including a certified report that identifies panelboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.5 ADJUSTING

A. Adjust moving parts and operable component to function smoothly and lubricate as recommended by manufacturer.

B. Set field-adjustable circuit-breaker trip ranges as specified in the "Overcurrent Protective Device Coordination Study."

C. Load Balancing: After Substantial Completion, but not more than 60 days after Final Acceptance, measure load balancing and make circuit changes.

1. Measure as directed during period of normal system loading.
2. Perform load-balancing circuit changes outside normal occupancy/working schedule of the facility and at time directed. Avoid disrupting critical 24-hour services such as fax machines and on-line data processing, computing, transmitting, and receiving equipment.
3. After circuit changes, recheck loads during normal load period. Record all load readings before and after changes and submit test records.
4. Tolerance: Difference exceeding 20 percent between phase loads, within a panelboard, is not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.

3.6 PROTECTION

A. Temporary Heating: Apply temporary heat to maintain temperature according to manufacturer's written instructions.

END OF SECTION 262416

SECTION 262726 - WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Standard-grade receptacles, 125 V, 20 A.
2. GFCI receptacles, 125 V, 20 A.
3. Hospital-grade receptacles, 125 V, 20 A.
4. Hazardous (classified) location receptacles.
5. Twist-locking receptacles.
6. Pendant cord-connector devices.
7. Cord and plug sets.
8. Toggle switches, 120/277 V, [15] [20] A.
9. Decorator-style devices, [15] [20] A.
10. Occupancy sensors.
11. Digital timer light switches.
12. Residential devices.
13. Wall-box dimmers.
14. Wall plates.
15. Floor service fittings.
16. Poke-through assemblies.
17. Prefabricated multioutlet assemblies.
18. Service poles.

1.3 DEFINITIONS

A. AFCI: Arc-fault circuit interrupter.

B. BAS: Building automation system.

C. EMI: Electromagnetic interference.

D. GFCI: Ground-fault circuit interrupter.

E. Pigtail: Short lead used to connect a device to a branch-circuit conductor.

F. RFI: Radio-frequency interference.

G. SPD: Surge protective device.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.

C. Samples: One for each type of device and wall plate specified, in each color specified.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing-label warnings and instruction manuals that include labeling conditions.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Service/Power Poles: One for every 10, but no fewer than one.
2. Floor Service-Outlet Assemblies: One for every 10, but no fewer than one.
3. Poke-Through, Fire-Rated Closure Plugs: One for every 10, but no fewer than one.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
1. Light switches:
    a. Hubbell.
    b. Slater.
    c. P&S.
    d. Arrow Hart.
    e. General Electric.
    f. Leviton.
2. Hazardous Area light switches:
    a. Crouse-Hinds.
    b. Appleton Electric Co.

c. Killark.

2.2 GENERAL WIRING-DEVICE REQUIREMENTS

A. Wiring Devices, Components, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

B. Comply with NFPA 70.

C. RoHS compliant.

D. Comply with NEMA WD 1.

E. Devices that are manufactured for use with modular plug-in connectors may be substituted under the following conditions:

1. Connectors shall comply with UL 2459 and shall be made with stranding building wire.
2. Devices shall comply with requirements in this Section.

F. Devices for Owner-Furnished Equipment:

1. Receptacles: Match plug configurations.
2. Cord and Plug Sets: Match equipment requirements.

G. Device Color:

1. Wiring Devices Connected to Normal Power System: selected by Architect unless otherwise indicated or required by NFPA 70 or device listing.

H. Wall Plate Color: For plastic covers, match device color.

I. Source Limitations: Obtain each type of wiring device and associated wall plate from single source from single manufacturer.

2.3 STANDARD-GRADE RECEPTACLES, 125 V, 20 A

A. Duplex Receptacles, 125 V, 20 A :

1. Description: Two pole, three wire, and self-grounding.
2. Configuration: NEMA WD 6, Configuration 5-20R.
3. Standards: Comply with UL 498 and FS W-C-596.

B. Isolated-Ground Duplex Receptacles, 125 V, 20 A :

1. Description: Straight blade; equipment grounding contacts shall be connected only to green grounding screw terminal of the device and with inherent electrical isolation from mounting strap. Isolation shall be integral to receptacle construction and not dependent on removable parts. Two pole, three wire, and self-grounding.

2. Configuration: NEMA WD 6, Configuration 5-20R.
3. Standards: Comply with UL 498 and FS W-C-596.

C. Tamper-Resistant Duplex Receptacles, 125 V, 20 A :

1. Description: Two pole, three wire, and self-grounding. Integral shutters that operate only when a plug is inserted in the receptacle.
2. Configuration: NEMA WD 6, Configuration 5-20R.
3. Standards: Comply with UL 498 and FS W-C-596.
4. Marking: Listed and labeled as complying with NFPA 70, "Tamper-Resistant Receptacles" Article.

D. Weather-Resistant Duplex Receptacle, 125 V, 20 A :

1. Description: Two pole, three wire, and self-grounding. Integral shutters that operate only when a plug is inserted in the receptacle. Square face.
2. Configuration: NEMA WD 6, Configuration 5-20R.
3. Standards: Comply with UL 498.
4. Marking: Listed and labeled as complying with NFPA 70, "Receptacles in Damp or Wet Locations" Article.

E. Tamper- and Weather-Resistant Duplex Receptacles, 125 V, 20 A :

1. Description: Two pole, three wire, and self-grounding. Integral shutters that operate only when a plug is inserted in the receptacle. Square face.
2. Configuration: NEMA WD 6, Configuration 5-20R.
3. Standards: Comply with UL 498.
4. Marking: Listed and labeled as complying with NFPA 70, "Tamper-Resistant Receptacles" and "Receptacles in Damp or Wet Locations" articles.

2.4 GFCI RECEPTACLES, 125 V, 20 A

A. Duplex GFCI Receptacles, 125 V, 20 A :

1. Description: Integral GFCI with "Test" and "Reset" buttons and LED indicator light. Two pole, three wire, and self-grounding.
2. Configuration: NEMA WD 6, Configuration 5-20R.
3. Type: Feed through.
4. Standards: Comply with UL 498, UL 943 Class A, and FS W-C-596.

B. Tamper-Resistant Duplex GFCI Receptacles, 125 V, 20 A :

1. Description: Integral GFCI with "Test" and "Reset" buttons and LED indicator light. Two pole, three wire, and self-grounding. Integral shutters that operate only when a plug is inserted in the receptacle.
2. Configuration: NEMA WD 6, Configuration 5-20R.
3. Type: Feed through.
4. Standards: Comply with UL 498, UL 943 Class A, and FS W-C-596.
5. Marking: Listed and labeled as complying with NFPA 70, "Tamper-Resistant Receptacles" Article.

C. Tamper- and Weather-Resistant, GFCI Duplex Receptacles, 125 V, 20 A :

1. Description: Integral GFCI with "Test" and "Reset" buttons and LED indicator light. Two pole, three wire, and self-grounding. Integral shutters that operate only when a plug is inserted in the receptacle. Square face.
2. Configuration: NEMA WD 6, Configuration 5-15R.
3. Type: Feed through.
4. Standards: Comply with UL 498 and UL 943 Class A.
5. Marking: Listed and labeled as complying with NFPA 70, "Tamper-Resistant Receptacles" and "Receptacles in Damp or Wet Locations" articles.

2.5 TWIST-LOCKING RECEPTACLES

A. Twist-Lock, Single Receptacles, 120 V, 20 A :

1. Configuration: NEMA WD 6, Configuration L5-20R.
2. Standards: Comply with UL 498.

B. Twist-Lock, Single Receptacles, 120 V, 30 A :

1. Configuration: NEMA WD 6, Configuration L5-30R.
2. Standards: Comply with UL 498.

C. Twist-Lock, Single Receptacles, 250 V, 20 A :

1. Configuration: NEMA WD 6, Configuration L6-20R.
2. Standards: Comply with UL 498.

D. Twist-Lock, Single Receptacles, 250 V, 30 A :

1. Configuration: NEMA WD 6, Configuration L6-30R.
2. Standards: Comply with UL 498.

E. Twist-Lock, Single Receptacles, 277 V, 20 A :

1. Configuration: NEMA WD 6, Configuration L7-20R.
2. Standards: Comply with UL 498.

2.6 PENDANT CORD-CONNECTOR DEVICES

A. Description: Matching, locking-type plug and receptacle body connector, heavy-duty grade.

B. Configuration: NEMA WD 6, Configurations L5-20P and L5-20R.

C. Body: Nylon, with screw-open, cable-gripping jaws and provision for attaching external cable grip.

D. External Cable Grip: Woven wire-mesh type made of high-strength, galvanized-steel wire strand, matched to cable diameter, and with attachment provision designed for corresponding connector.

E. Standards: Comply with FS W-C-596.

2.7 CORD AND PLUG SETS

A. Match voltage and current ratings and number of conductors to requirements of equipment being connected.

B. Cord: Rubber-insulated, stranded-copper conductors, with Type SOW-A jacket; with green-insulated grounding conductor and ampacity of at least 130 percent of the equipment rating.

C. Plug: Nylon body and integral cable-clamping jaws. Match cord and receptacle type for connection.

2.8 TOGGLE SWITCHES, 120/277 V, 20 A

A. Single-Pole Switches, 120/277 V, 20 A :

1. Standards: Comply with UL 20 and FS W-S-896.

B. Antimicrobial, Single-Pole Switches, 120/277 V, 20 A :

1. Description: Contact surfaces treated with a coating that kills 99.9 percent of certain common bacteria within two hours when regularly and properly cleaned.
2. Standards: Comply with UL 20 and FS W-S-896.

C. Two-Pole Switches, 120/277 V, 20 A :

1. Comply with UL 20 and FS W-S-896.

D. Three-Way Switches, 120/277 V, 20 A :

1. Comply with UL 20 and FS W-S-896.
2.

2.9 OCCUPANCY SENSORS

A. Wall Switch Sensor Light Switch, Dual Technology :

1. Description: Switchbox-mounted, combination lighting-control sensor and conventional switch lighting-control unit using dual technology.
2. Standards: Comply with UL 20.
3. Rated 960 W at 120 V ac for tungsten lighting, 10 A at 120 V ac or 10 A at 277 V ac for fluorescent or LED lighting, and 1/4 hp at 120 V ac.
4. Adjustable time delay of 20 minutes.

5. Able to be locked to Manual-On mode.
6. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc (21.5 to 2152 lux).

2.10 TIMER LIGHT SWITCH

A. Digital Timer Light Switch :

1. Description: Switchbox-mounted, combination digital timer and conventional switch lighting-control unit, with backlit digital display, with selectable time interval in 20-minute increments.
2. Standards: Comply with UL 20.
3. Rated 960 W at 120 V ac for tungsten lighting, 10 A at 120 V ac or 10 A at 277 V ac for fluorescent or LED lighting, and 1/4 hp at 120 V ac.
4. Integral relay for connection to BAS.

2.11 WALL PLATES

A. Single Source: Obtain wall plates from same manufacturer of wiring devices.

B. Single and combination types shall match corresponding wiring devices.

1. Plate-Securing Screws: Metal with head color to match plate finish.
2. Material for Finished Spaces: Steel with white baked enamel, suitable for field painting.
3. Material for Unfinished Spaces: Galvanized steel
4. Material for Damp Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in wet and damp locations.

C. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with Type 3R, weather-resistant, die-cast aluminum with lockable cover.

D. Antimicrobial Cover Plates:

1. Contact surfaces treated with a coating that kills 99.9 percent of certain common bacteria within two hours when regularly and properly cleaned.
2. Tarnish resistant.

2.12 FLOOR SERVICE FITTINGS

A. Flush-Type Floor Service Fittings:

1. Description: Type: Modular, flush-type, dual-service units suitable for wiring method used, with cover flush with finished floor.
2. Compartments: Barrier separates power from voice and data communication cabling.
3. Service Plate and Cover: Rectangular, solid brass with satin finish.
4. Power Receptacle: NEMA WD 6 Configuration 5-20R, gray finish, unless otherwise indicated.

5. Data Communication Outlet: Two modular, keyed, color-coded, RJ-45 jacks for twisted pair cable

2.13 SERVICE POLES

A. Dual-Channel Service Poles :

1. Description: Factory-assembled and -wired units to extend power and voice and data communication from distribution wiring concealed in ceiling to devices or outlets in pole near floor.
2. Poles: Nominal 2.5-inch- (65-mm-) square cross-section, with height adequate to extend from floor to at least 6 inches (150 mm) above ceiling, and with separate channels for power wiring and voice and data communication cabling.
3. Mounting: Ceiling trim flange with concealed bracing arranged for positive connection to ceiling supports; with pole foot and carpet pad attachment.
4. Material: Aluminum
5. Finishes: Manufacturer's standard painted finish and trim combination
6. Wiring: Sized for minimum of five No. 12 AWG power and ground conductors and a minimum of four, balanced twisted pair data communication cables.
7. Power Receptacles: Two duplex, 20-A, straight-blade receptacles complying with requirements in this Section.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1, including mounting heights listed in that standard, unless otherwise indicated.

B. Coordination with Other Trades:

1. Protect installed devices and their boxes. Do not place wall finish materials over device boxes, and do not cut holes for boxes with routers that are guided by riding against outside of boxes.
2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
4. Install wiring devices after all wall preparation, including painting, is complete.

C. Conductors:

1. Do not strip insulation from conductors until right before they are spliced or terminated on devices.
2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.

3. The length of free conductors at outlets for devices shall comply with NFPA 70, Article 300, without pigtails.
4. Existing Conductors:

    a. Cut back and pigtail, or replace all damaged conductors.
    b. Straighten conductors that remain and remove corrosion and foreign matter.
    c. Pigtailing existing conductors is permitted, provided the outlet box is large enough.

D. Device Installation:

1. Replace devices that have been in temporary use during construction and that were installed before building finishing operations were complete.
2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, two-thirds to three-fourths of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device-mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles up, and on horizontally mounted receptacles to the right.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

G. Dimmers:

1. Install dimmers within terms of their listing.
2. Verify that dimmers used for fan-speed control are listed for that application.
3. Install unshared neutral conductors on line and load side of dimmers according to manufacturers' device, listing conditions in the written instructions.

H. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

I. Adjust locations of floor service outlets and service poles to suit arrangement of partitions and furnishings.

3.2 GFCI RECEPTACLES

A. Install non-feed-through GFCI receptacles where protection of downstream receptacles is not required.

3.3 IDENTIFICATION

A. Comply with Section 260553 "Identification for Electrical Systems."

B. Identify each receptacle with panelboard identification and circuit number. Use hot, stamped, or engraved machine printing with black filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

C. Essential Electrical System: Mark receptacles supplied from the essential electrical system to allow easy identification using a self-adhesive label.

3.4 FIELD QUALITY CONTROL

A. Test Instruments: Use instruments that comply with UL 1436.

B. Test Instrument for Receptacles: Digital wiring analyzer with digital readout or illuminated digital-display indicators of measurement.

C. Perform the following tests and inspections.

1. Test Instruments: Use instruments that comply with UL 1436.
2. Test Instrument for Receptacles: Digital wiring analyzer with digital readout or illuminated digital-display indicators of measurement.

D. Tests for Receptacles:

1. Line Voltage: Acceptable range is 105 to 132 V.
2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is unacceptable.
3. Ground Impedance: Values of up to 2 ohms are acceptable.
4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
5. Using the test plug, verify that the device and its outlet box are securely mounted.
6. Tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault-current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

E. Wiring device will be considered defective if it does not pass tests and inspections.

F. Prepare test and inspection reports.

END OF SECTION 262726

SECTION 262813 – FUSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Cartridge fuses rated 600-V ac and less for use in control circuits enclosed switches switchboards enclosed controllers and motor-control centers.
2. Spare-fuse cabinets.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material, dimensions, descriptions of individual components, and finishes for spare-fuse cabinets. Include the following for each fuse type indicated:

1. Ambient Temperature Adjustment Information: If ratings of fuses have been adjusted to accommodate ambient temperatures, provide list of fuses with adjusted ratings.

    a. For each fuse having adjusted ratings, include location of fuse, original fuse rating, local ambient temperature, and adjusted fuse rating.
    b. Provide manufacturer's technical data on which ambient temperature adjustment calculations are based.

2. Dimensions and manufacturer's technical data on features, performance, electrical characteristics, and ratings.
3. Current-limitation curves for fuses with current-limiting characteristics.
4. Time-current coordination curves (average melt) and current-limitation curves (instantaneous peak let-through current) for each type and rating of fuse Coordination charts and tables and related data.
5. Fuse sizes for elevator feeders and elevator disconnect switches.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fuses to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:

1. Ambient temperature adjustment information.
2. Current-limitation curves for fuses with current-limiting characteristics.
3. Time-current coordination curves (average melt) and current-limitation curves (instantaneous peak let-through current) for each type and rating of fuse. Coordination charts and tables and related data.

1.5 MATERIALS MAINTENANCE SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than six of each size and type.

1.6 QUALITY ASSURANCE

A. Source Limitations: Obtain fuses, for use within a specific product or circuit, from single source from single manufacturer.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Comply with NEMA FU 1 for cartridge fuses.

D. Comply with NFPA 70.

E. Comply with UL 248-11 for plug fuses.

1.7 PROJECT CONDITIONS

A. Where ambient temperature to which fuses are directly exposed is less than 40 deg F (5 deg C) or more than 100 deg F (38 deg C), apply manufacturer's ambient temperature adjustment factors to fuse ratings.

1.8 COORDINATION

A. Coordinate fuse ratings with utilization equipment nameplate limitations of maximum fuse size and with system short-circuit current levels.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cooper Bussmann, Inc.
2. Edison Fuse, Inc.
3. Ferraz Shawmut, Inc.
4. Littlefuse, Inc.

2.2 CARTRIDGE FUSES

A. Characteristics: NEMA FU 1, nonrenewable cartridge fuses with voltage ratings consistent with circuit voltages.

2.3 SPARE-FUSE CABINET

A. Characteristics: Wall-mounted steel unit with full-length, recessed piano-hinged door and key-coded cam lock and pull.

1. Size: Adequate for storage of spare fuses specified with 15 percent spare capacity minimum.
2. Finish: Gray, baked enamel.
3. Identification: "SPARE FUSES" in 1-1/2-inch- (38-mm-) high letters on exterior of door.
4. Fuse Pullers: For each size of fuse, where applicable and available, from fuse manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fuses before installation. Reject fuses that are moisture damaged or physically damaged.

B. Examine holders to receive fuses for compliance with installation tolerances and other conditions affecting performance, such as rejection features.

C. Examine utilization equipment nameplates and installation instructions. Install fuses of sizes and with characteristics appropriate for each piece of equipment.

D. Evaluate ambient temperatures to determine if fuse rating adjustment factors must be applied to fuse ratings.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 FUSE APPLICATIONS

A. Cartridge Fuses:

1. Service Entrance: Per Approved Overcurrent Protection Study.
2. Feeders: Per Approved Overcurrent Study

3. Motor Branch Circuits: Class RK5, time delay.
4. Other Branch Circuits: Per Approved Overcurrent Protection Study
5. Control Circuits: Class CC, fast acting.

3.3 INSTALLATION

A. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.

B. Install spare-fuse cabinet(s).

3.4 IDENTIFICATION

A. Install labels complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems" and indicating fuse replacement information on inside door of each fused switch and adjacent to each fuse block, socket, and holder.

END OF SECTION 262813

SECTION 262816 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Fusible switches.
2. Non-fusible switches.
3. Molded-case circuit breakers (MCCBs).
4. Molded-case switches.
5. Enclosures.

1.3 DEFINITIONS

A. NC: Normally closed.

B. NO: Normally open.

C. SPDT: Single pole, double throw.

1.4 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Enclosed switches and circuit breakers shall withstand the effects of earthquake motions determined according to ASCE/SEI 7

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

1.5 ACTION SUBMITTALS

A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.

1. Enclosure types and details.

2. Current and voltage ratings.
3. Short-circuit current ratings (interrupting and withstand, as appropriate).
4. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices, accessories, and auxiliary components.

B. Shop Drawings: For enclosed switches and circuit breakers. Include plans, elevations, sections, details, and attachments to other work.

1. Wiring Diagrams: For power, signal, and control wiring.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Seismic Qualification Certificates: For enclosed switches and circuit breakers, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

C. Field quality-control reports.

1. Test procedures used.
2. Test results that comply with requirements.
3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

D. Manufacturer's field service report.

1.7 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For enclosed switches and circuit breakers to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:

1. Manufacturer's written instructions for testing and adjusting enclosed switches and circuit breakers.
2. Time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device.

1.8 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than six of each size and type.
2. Fuse Puller two for each size and type.

1.9 QUALITY ASSURANCE

A. Source Limitations: Obtain enclosed switches and circuit breakers, overcurrent protective devices, components, and accessories, within same product category, from single source from single manufacturer.

B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for enclosed switches and circuit breakers, including clearances between enclosures, and adjacent surfaces and other items. Comply with indicated maximum dimensions.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Comply with NFPA 70.

1.10 PROJECT CONDITIONS

A. Environmental Limitations: Rate equipment for continuous operation under the following conditions unless otherwise indicated:

1. Ambient Temperature: Not less than minus 22 deg F (minus 30 deg C) and not exceeding 104 deg F (40 deg C).
2. Altitude: Not exceeding 6600 feet (2010 m).

B. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:

1. Notify Engineer and Owner no fewer than two days in advance of proposed interruption of electric service.
2. Indicate method of providing temporary electric service.
3. Do not proceed with interruption of electric service without Engineer and Owner's written permission.
4. Comply with NFPA 70E.

1.11 COORDINATION

A. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels in accordance with NFPA 70.

PART 2 - PRODUCTS

2.1 FUSIBLE SWITCHES

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.
5. or approved equal

B. Type HD, Heavy Duty, Single Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate fuses per the approved breaker coordination study or as specified, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

C. Type HD, Heavy Duty, multi-pole, Single or Double Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate fuses per the approved breaker coordination study or as specified, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position when specifically shown on the drawings.

D. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
4. Auxiliary Contact Kit: Where shown on the drawings, two NO/NC (Form "C") auxiliary contact(s), arranged to activate before switch blades open.
5. Hook stick Handle: Allows use of a hook stick to operate the handle.
6. Lugs: Mechanical type, suitable for number, size, and conductor material.
7. Service-Rated Switches: Labeled for use as service equipment.
8. Accessory Control Power Voltage: As shown on the drawings.

2.2 NONFUSIBLE SWITCHES

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.
5. or approved equal

B. Type HD, Heavy Duty, Single Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

C. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Auxiliary Contact Kit: Where shown on the drawings, two NO/NC (Form "C") auxiliary contact(s), arranged to activate before switch blades open.
4. Hookstick Handle: Allows use of a hookstick to operate the handle.
5. Lugs: Mechanical type, suitable for number, size, and conductor material.
6. Accessory Control Power Voltage: As shown on the drawings.

2.3 MOLDED-CASE CIRCUIT BREAKERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
1. ABB
2. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
3. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
4. Siemens Energy & Automation, Inc.
5. Square D; a brand of Schneider Electric.
6. or approved equal.

B. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.

C. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

D. Adjustable, Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.

E. Electronic Trip Circuit Breakers: Field-replaceable rating plug, rms sensing, with the following field-adjustable settings:

1. Instantaneous trip.
2. Long- and short-time pickup levels.
3. Long- and short-time time adjustments.
4. Ground-fault pickup level, time delay, and I^2t response.

F. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller, and let-through ratings less than NEMA FU 1, RK-5.

G. Integrally Fused Circuit Breakers: Thermal-magnetic trip element with integral limiter-style fuse listed for use with circuit breaker and trip activation on fuse opening or on opening of fuse compartment door.

H. Ground-Fault, Circuit-Interrupter (GFCI) Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).

I. Ground-Fault, Equipment-Protection (GFEP) Circuit Breakers: With Class B ground-fault protection (30-mA trip).

J. Features and Accessories:

1. Standard frame sizes, trip ratings, and number of poles.
2. Lugs: Mechanical type, suitable for number, size, trip ratings, and conductor material.
3. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge lighting circuits.
4. Ground-Fault Protection: Comply with UL 1053; integrally mounted, self-powered type with mechanical ground-fault indicator; relay with adjustable pickup and time-delay settings, push-to-test feature, internal memory, and shunt trip unit; and three-phase, zero-sequence current transformer/sensor.
5. Communication Capability (when specifically shown on the controls drawings): Circuit-breaker-mounted communication module with functions and features compatible with power monitoring and control system, specified in Section 260913 "Electrical Power Monitoring and Control."
6. Shunt Trip (When specifically shown on the oneline diagram): Trip coil energized from separate circuit, with coil-clearing contact.
7. Undervoltage Trip: Set to operate at 35 to 75 percent of rated voltage without intentional time delay.
8. Auxiliary Contacts: (When shown on the drawings) two SPDT switches with "a" and "b" contacts; "a" contacts mimic circuit-breaker contacts, "b" contacts operate in reverse of circuit-breaker contacts.
9. Alarm Switch: One NC contact that operates only when circuit breaker has tripped.
10. Key Interlock Kit: Externally mounted to prohibit circuit-breaker operation; key shall be removable only when circuit breaker is in off position.
11. Zone-Selective Interlocking: Integral with electronic ground-fault trip unit; for interlocking ground-fault protection function.
12. Electrical Operator: Provide remote control for on, off, and reset operations.
13. Accessory Control Power Voltage: Integrally mounted, self-powered As shown on the drawings.

2.4 MOLDED-CASE SWITCHES

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
1. ABB
2. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
3. General Electric Company; GE Consumer & Industrial - Electrical Distribution.

4. Siemens Energy & Automation, Inc.
5. Square D; a brand of Schneider Electric.
6. or approved equal

B. General Requirements: MCCB with fixed, high-set instantaneous trip only, and short-circuit withstand rating equal to equivalent breaker frame size interrupting rating.

C. Features and Accessories:

1. Standard frame sizes and number of poles.
2. Lugs: Mechanical type, suitable for number, size, trip ratings, and conductor material.
3. Ground-Fault Protection: Comply with UL 1053; remote-mounted and powered type with mechanical ground-fault indicator; relay with adjustable pickup and time-delay settings, push-to-test feature, internal memory, and shunt trip unit; and three-phase, zero-sequence current transformer/sensor.
4. Shunt Trip (When specifically shown on the drawings): Trip coil energized from separate circuit, with coil-clearing contact.
5. Undervoltage Trip: Set to operate at 35 to 75 percent of rated voltage without intentional time delay.
6. Auxiliary Contacts: (When shown on the drawings) two SPDT switches with "a" and "b" contacts; "a" contacts mimic switch contacts, "b" contacts operate in reverse of switch contacts.
7. Alarm Switch: One NC contact (When shown on the drawings.) that operates only when switch has tripped.
8. Key Interlock Kit: Externally mounted to prohibit switch operation; key shall be removable only when switch is in off position.
9. Zone-Selective Interlocking: Integral with ground-fault shunt trip unit; for interlocking ground-fault protection function.
10. Electrical Operator: Provide remote control for on, off, and reset operations.
11. Accessory Control Power Voltage: Integrally mounted, self-poweredAs shown on the drawings.

2.5 ENCLOSURES

A. Enclosed Switches and Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.

1. Indoor, Dry and Clean Locations: NEMA 250, Type 1.
2. Outdoor Locations: NEMA 250, Type 4X Stainless Steel unless specifically indicated otherwise on the drawings.
3. Indoor damp, wet, corrosive areas: NEMA 250, Type 4X, non metallic enclosure
4. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 12.
5. Hazardous Areas Indicated on Drawings: NEMA 250, Type 7.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.

B. Comply with mounting and anchoring requirements specified in Section 260548.16 "Seismic Controls for Electrical Systems."

C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

D. Install fuses in fusible devices.

E. Comply with NECA 1.

3.3 IDENTIFICATION

A. Comply with requirements in Section 260553 "Identification for Electrical Systems."

1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
2. Label each enclosure with engraved metal or laminated-plastic nameplate.

3.4 FIELD QUALITY CONTROL

A. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each enclosed switch and circuit breaker, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
3. Perform the following infrared scan tests and inspections and prepare reports:

    a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each enclosed switch and circuit breaker. Remove front panels so joints and connections are accessible to portable scanner.
    b. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each enclosed switch and circuit breaker 11 months after date of Substantial Completion.
    c. Instruments and Equipment: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.

4. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.

D. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies enclosed switches and circuit breakers and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.5 ADJUSTING

A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

B. Set field-adjustable circuit-breaker trip ranges as specified in Section 260573 "Overcurrent Protective Device Coordination Study."

END OF SECTION 262816

SECTION 264113 - LIGHTNING PROTECTION FOR STRUCTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes lightning protection for structures and buildings.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For air terminals and mounting accessories.

1. Layout of the lightning protection system, along with details of the components to be used in the installation.
2. Include indications for use of raceway, data on how concealment requirements will be met, and calculations required by NFPA 780 for bonding of grounded and isolated metal bodies.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer and manufacturer. Include data on listing or certification by UL.

B. Provide a certification, from the manufacturer of all roofing systems that the mounting method is approved by manufacturer of roofing material.

C. Field quality-control reports.

D. Comply with recommendations in NFPA 780, Annex D, "Inspection and Maintenance of Lightning Protection Systems," for maintenance of the lightning protection system.

E. Other Informational Submittals: Plans showing dimensioned as-built locations of grounding features, including the following:

1. Ground rods.
2. Ground loop conductor.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Certified by UL or LPI as a Master Installer/Designer, trained and approved for installation of units required for this Project.

B. System Certificate:

1. UL Master Label.
2. LPI System Certificate.
3. Provide a Recertification for any existing lighting protections system that the proposed system connects to.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 780, "Definitions" Article.

1.6 COORDINATION

A. Coordinate installation of lightning protection with installation of other building systems and components, including electrical wiring, supporting structures and building materials, metal bodies requiring bonding to lightning protection components, and building finishes.

B. Coordinate installation of air terminals attached to roof systems with roofing manufacturer and Installer.

C. Flashings of through-roof assemblies shall comply with roofing manufacturers' specifications.

PART 2 - PRODUCTS

2.1 LIGHTNING PROTECTION SYSTEM COMPONENTS

A. Comply with UL 96 and NFPA 780.

B. Roof-Mounted Air Terminals: NFPA 780, Class I or Class II depending on building height, copper unless otherwise indicated.
1. Basis-of-Design Product: Subject to compliance with requirements, or comparable product by one of the following:

a. East Coast Lightning Equipment Inc.
b. ERICO International Corporation.
c. Harger.
d. Heary Bros. Lightning Protection Co. Inc.
e. Independent Protection Co.
f. Preferred Lightning Protection.
g. Robbins Lightning, Inc.
h. Thompson Lightning Protection, Inc.
i. or Approved Equal

2. Air Terminals More than 24 Inches (600 mm) Long: With brace attached to the terminal at not less than half the height of the terminal.
3. Single-Membrane, Roof-Mounted Air Terminals: Designed specifically for single-membrane roof system materials. Comply with requirements in roofing Sections.

C. Main and Bonding Conductors: Copper.

D. Ground Loop Conductor: The same size and type as the main conductor except tinned.

E. Ground Rods: Copper-clad steel, sectional type; [3/4 inch (19 mm) in diameter by 10 feet (3 m) long.

F. Heavy-Duty, Stack-Mounted, Lightning Protection Components: Stainless steel.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install lightning protection components and systems according to UL 96A and NFPA 780

B. Install conductors with direct paths from air terminals to ground connections. Avoid sharp bends.

C. Conceal the following conductors:

1. System conductors.
2. Down conductors.
3. Interior conductors.
4. Conductors within normal view of exterior locations at grade within 200 feet (60 m) of building.

D. Cable Connections: Use crimped or bolted connections for all conductor splices and connections between conductors and other components. Use exothermic-welded connections in underground portions of the system.

E. Cable Connections: Use exothermic-welded connections for all conductor splices and connections between conductors and other components.

1. Exception: In single-ply membrane roofing, exothermic-welded connections may be used only below the roof level.

F. Air Terminals on Single-Ply Membrane Roofing: Comply with roofing membrane and adhesive manufacturer's written instructions.

G. Bond extremities of vertical metal bodies exceeding 60 feet (18 m) in length to lightning protection components.

H. Ground Loop: Install ground-level, potential equalization conductor and extend around the perimeter of structure.

1. Bury ground ring not less than 24 inches (600 mm) from building foundation.
2. Bond ground terminals to the ground loop.
3. Bond grounded building systems to the ground loop conductor within 12 feet (3.6 m) of grade level.

I. Bond lightning protection components with intermediate-level interconnection loop conductors to grounded metal bodies of building at 60-foot (18-m) intervals.

J. Install a bond jumper between the building ground and the lighting protection Ground Loop. The bond jumper shall be a 4/0.

3.2 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

3.3 CORROSION PROTECTION

A. Do not combine materials that can form an electrolytic couple that will accelerate corrosion in the presence of moisture unless moisture is permanently excluded from junction of such materials.

B. Use conductors with protective coatings where conditions cause deterioration or corrosion of conductors.

3.4 FIELD QUALITY CONTROL

A. Notify Architect at least 48 hours in advance of inspection before concealing lightning protection components.

B. Obtain one of the following labels:

1. UL Inspection: Meet requirements to obtain a UL Master Label for system.
2. LPI System Inspection: Meet requirements to obtain an LPI System Certificate.

END OF SECTION 264113

SECTION 264313 - LOW-VOLTAGE SURGE PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

A. Section includes field-mounted SPDs for low-voltage (120 to 600 V) power distribution and control equipment.

B. Related Requirements:
   1. Section 262416 "Panelboards" for factory installed SPDs.

1.3 DEFINITIONS

A. I_n: Nominal discharge current.

B. MCOV: Maximum continuous operating voltage.

C. Mode(s), also Modes of Protection: The pair of electrical connections where the VPR applies.

D. MOV: Metal-oxide varistor; an electronic component with a significant non-ohmic current-voltage characteristic.

E. OCPD: Overcurrent protective device.

F. SCCR: Short-circuit current rating.

G. SPD: Surge protective device.

H. VPR: Voltage protection rating.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

   1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
   2. Copy of UL Category Code VZCA certification, as a minimum, listing the tested values for VPRs, In nominal ratings, MCOVs, type designations, OCPD requirements, model numbers, system voltages, and modes of protection.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

B. Sample Warranty: For manufacturer's special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For SPDs to include in maintenance manuals.

1.7 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to replace or replace SPDs that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion, including replacement.

1.8 MANUFACTURERS

A. Subject to compliance with requirements, [provide products by one of the following]:
1. ABB France. (Current Technology)
2. Advanced Protection Technologies Inc. (APT).
3. Eaton Corporation, (Innovative Technology.)
4. Emerson Electric Co. (Liebert)
5. Schneider Electric Industries SAS.
6. Siemens Industry, Inc.
7. Surge Suppression, Inc
8. Total Protection Solutions
9. DEHN Inc.

PART 2 - PRODUCTS

2.1 GENERAL SPD REQUIREMENTS

A. SPD with Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

C. All Surge Protective Devices (SPDs) shall be tested and listed to the latest edition of ANSI/UL 1449-2006. “Manufactured in accordance with UL 1449” is not equivalent to being listed to ANSI/UL 1449-2006 and does not meet the intention of this specification.

D. MCOV of the SPD shall be the nominal system voltage.

E. SPD units shall be UL 1283 Listed as an Electromagnetic Interference Filter and marked accordingly.

F. Provide SPDs with the following modes of protection:
   1. Three-Phase, Four Wire systems: 10 Modes: L1-L2, L2-L3, L3-L1, L1-N, L2-N, L3-N, L1-G, L2-G, L3-G, N-G
   2. Three-Phase, Three Wire systems: 6 Modes: L1-L2, L2-L3, L3-L1, L1-G, L2-G, L3-G
   3. Single-Phase, Three Wire Systems: 6 Modes: L1-L2, L2-N, N-L1, L1-G, L2-G, N-G

2.2 SERVICE ENTRANCE AND TRANSFER SWITCH SUPPRESSOR

A. SPDs: Listed under UL 1449, Type 1.

   1. SPDs with the following features and accessories:

      a. Integral disconnect switch and overcurrent protection.
      b. Internal thermal protection that disconnects the SPD before damaging internal suppressor components.
      c. Indicator light display for protection status.
      d. Form-C contacts rated at 5 A and 250-V ac, one normally open and one normally closed, for remote monitoring of protection status.
      e. Digital Display Surge counter that counts the number of surges the device has experienced since installation.
      f. Audible alarm

B. Peak Surge Current Rating: The minimum single-pulse surge current withstand rating per phase shall not be less than 240kA. The peak surge current rating shall be the arithmetic sum of the ratings of the individual MOVs in a given mode.

C. Protection modes and UL 1449 VPR for grounded wye circuits with 480Y/277 V ,208Y/120 V or 240/120 V, three-phase, four-wire circuits shall not exceed the following:

   1. Line to Neutral: 1200 V for 480Y/277 V; 700 V for 208Y/120 & 240/120 V.
   2. Line to Ground: 1200 V for 480Y/277 V; 1200 V for 208Y/120 & 240/120 V.
   3. Line to Line: 2000 V for 480Y/277 V 1000 V for 208Y/120 & 240/120 V.

D. Protection modes and UL 1449 VPR for 240/120 V, single-phase, three-wire circuits shall not exceed the following:

   1. Line to Neutral: 700 V.
   2. Line to Ground: 1000
   3. Line to Line: 1000 V.

E. SCCR: Equal or exceed 200 kAIC.

F. Nominal Discharge Current (I_n) Rating: 20 kA.

2.3 SWITCHBOARD, PANELBOARD AND MCC SUPPRESSORS

A. SPDs: Comply with UL 1449, Type 2.

1. Include LED indicator lights for power and protection status.
2. Internal thermal protection that disconnects the SPD before damaging internal suppressor components.
3. Include Form-C contacts rated at 5 A and 250-V ac, one normally open and one normally closed, for remote monitoring of protection status

B. Peak Surge Current Rating: The minimum single-pulse surge current withstand rating per phase shall not be less than 100 kA. The peak surge current rating shall be the arithmetic sum of the ratings of the individual MOVs in a given mode.

C. .

D. Protection modes and UL 1449 VPR for grounded wye circuits with, three-phase, four-wire circuits shall not exceed the following:

1. Line to Neutral: 1200 V for 480Y/277 V or 700 V for 208Y/120 V & 240/120 V.
2. Line to Ground: 1200 V for 480Y/277 V or 700 V for 208Y/120 V & 240/120 V.
3. Neutral to Ground: 1200 V for 480Y/277 V or 700 V for 208Y/120 V & 240/120 V.
4. Line to Line: 2000 V for 480Y/277 V or 1200 V for 208Y/120 V & 240/120 V

E. Protection modes and UL 1449 VPR for 240/120-V, single-phase, three-wire circuits shall not exceed the following:

1. Line to Neutral: 600V.
2. Line to Ground: 600V.
3. Neutral to Ground: 600V.
4. Line to Line: 1000V.

F. SCCR: Equal or exceed 100K AIC min or per the one-line diagram

G. Nominal Discharge Current (I_n) Rating: 20 kA

H. Sinewave Tracking/Frequency Responsive Capability.
1. SPDs installed to protect Switchboards, Panelboards or MCCs serving sensitive electronic equipment shall utilize voltage independent, frequency responsive dedicated Sinewave Tracking circuitry to mitigate the effects of switching or ringing surges.
   a. Sensitive Electronic Equipment shall include, but is not limited to:
      1) Variable Frequency Controllers
      2) Lighting with Electronic Ballasts
2. EMI/RFI filtering specifically will not be considered as equal to sinewave tracking.

3. Devices with Sinewave Tracking circuitry shall be tested in accordance with the latest edition of IEEE C62.41.2 for a Category A Ring Wave (2000 volt – 67-amp ring wave)
   a. The maximum amplitude shall be less than 50V peak deviation from the insertion point of the surge on the sine wave to the peak of the transient.

2.4 ENCLOSURES

A. Indoor Enclosures: NEMA 250, Type 1.

B. Outdoor Enclosures: NEMA 250, Type 4X.

2.5 CONDUCTORS AND CABLES

A. Power Wiring: Same size as SPD leads, complying with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1.

B. Install an OCPD or disconnect as required to comply with the UL listing of the SPD. DO NOT WIRE DIRECT TO PANEL BUS

C. Install SPDs with conductors between suppressor and points of attachment as short and straight as possible and adjust circuit-breaker positions to achieve shortest and straightest leads. Do not splice and extend SPD leads unless specifically permitted by manufacturer. Do not exceed manufacturer's recommended lead length. Do not bond neutral and ground.

D. Use crimped connectors and splices only. Wire nuts are unacceptable.

E. Wiring:

1. Power Wiring: Comply with wiring methods in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
2. Controls: Comply with wiring methods in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

3.2 FIELD QUALITY CONTROL

A. Perform the following tests and inspections with the assistance of a factory-authorized service representative.

1. Compare equipment nameplate data for compliance with Drawings and Specifications.
2. Inspect anchorage, alignment, grounding, and clearances.
3. Verify that electrical wiring installation complies with manufacturer's written installation requirements.

B. An SPD will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.3 STARTUP SERVICE

A. Complete startup checks according to manufacturer's written instructions.

B. Do not perform insulation-resistance tests of the distribution wiring equipment with SPDs installed. Disconnect SPDs before conducting insulation-resistance tests and reconnect them immediately after the testing is over.

C. Energize SPDs after power system has been energized, stabilized, and tested.

END OF SECTION 264313

SECTION 265119 - LED INTERIOR LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Provide all materials, equipment and perform all operations for complete installation of interior LED luminaires and related Work as indicated on the Drawings and specified herein, including but not limited to the following:

1. Interior Luminaires.
2. Emergency lighting units.
3. Exit signs.
4. Luminaire supports.

B. Related Sections:

1. Division 26

1.3 DEFINITIONS

A. CCT: Correlated Color Temperature.

B. CRI: Color Rendering Index.

C. Emergency Lighting Unit: A lighting unit with internal or external emergency battery powered supply and the means for controlling and charging the battery and unit operation.

D. Fixture: See "Luminaire."

E. IESNA: Illumination Engineering Society of North America

F. IP: International Protection or Ingress Protection Rating.

G. LED: Light-Emitting Diode.

H. Lumen: Measured output of LED and luminaire, or both.

I. Luminaire: Complete lighting unit, including LED, driver, reflector, and housing.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Arrange in order of luminaire designation.
2. Include data on features, accessories, and finishes.
3. Include physical description and dimensions of luminaires.
4. Include emergency lighting units, including batteries and chargers.
5. Include life, output (lumens, CCT, and CRI), and energy-efficiency data.
6. Photometric data and adjustment factors based on laboratory tests**,** complying with IES "Lighting Measurements Testing and Calculation Guides" for each luminaire type. The adjustment factors shall be for LED’s and accessories identical to those indicated for the luminaire as applied in this Project.
   a. Manufacturers' Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
7. Air and Thermal Performance Data: For air-handling luminaires. Furnish data required in "Action Submittals" Article in Section 233713 "Diffusers, Registers, and Grilles."
8. Sound Performance Data: For air-handling luminaires. Indicate sound power level and sound transmission class in test reports certified according to standards specified in Section 233713 "Diffusers, Registers, and Grilles."

B. Shop Drawings: For nonstandard or custom luminaires.

1. Include plans, elevations, sections, and mounting and attachment details.
2. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include diagrams for power, signal, and control wiring.

C. Samples: When requested by the engineer, provide a sample luminaire of each type and style including all specified options, mounting brackets, and accessories. Each Sample shall include the following:

1. LED’s and drivers, installed.
2. Cords and plugs.
3. Pendant support system.

D. Product Schedule: For luminaires, emergency lighting units, exit signs and LED’s. Use same designations indicated on Drawings.

E. Samples: Submit one complete operating unit for each type of luminaire specified, if requested by the Design Professional.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Luminaires.
2. Suspended ceiling components.
3. Partitions and millwork that penetrate the ceiling or extend to within 12 inches (300 mm) of the plane of the luminaires.
4. Structural members to which suspension systems for luminaires will be attached.
5. Initial access modules for acoustical tile, including size and locations.
6. Other items in finished ceiling, including the following:

    a. Other luminaires.
    b. Air outlets and inlets.
    c. Speakers.
    d. Sprinklers.
    e. Access panels.
    f. Ceiling-mounted projectors.
    g. Occupancy sensors.
    h. Smoke and Heat Detectors.
    i. Fire alarm audible and visual devices.
    j. Security sensors.
    k. Cameras.
    l. Wireless access points.

7. Moldings.

B. Calculations: Provide lighting calculations for all interior spaces in accordance with IESNA guidelines. All calculations shall be performed under the supervision of a person holding a PE registered in the state in which the project is being constructed. All calculations shall include all assumptions. All rooms shall have point to points with the following summaries per room: Max/Min, Ave/Min, and Average Illumination.
    a. The contractor shall call special attention to the engineer for any spaces that do not meet IESNA Guidelines.

C. Qualification Data: For testing laboratory providing photometric data for luminaires.

D. Product Certificates: For each type of luminaire.

E. Sample of special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For luminaires and lighting systems to include in operation and maintenance manuals.

1. Provide a list of all LED types used on Project; use ANSI and manufacturers' codes.

2. Provide luminance test results within each room that verify that the lighting calculation levels (fc) at the working plane have been achieved.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. LED Assembly: Five for every 100 of each type and rating installed. Furnish at least two of each type.
2. Diffusers and Lenses: One for every 100 of each type and rating installed. Furnish at least one of each type.
3. LED Driver: One for every 100 of each type and rating installed. Furnish at least two of each type.
4. Globes and Guards: One for every 20 of each type and rating installed. Furnish at least two of each type.
5. Luminaire-mounted, emergency battery pack: One for every 20 emergency lighting units. Furnish at least two of each type.

1.8 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications: Luminaire manufacturer's laboratory that is accredited under the NVLAP for Energy Efficient Lighting Products and complying with the applicable IES testing standards.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Provide luminaires from a single manufacturer for each luminaire type.

D. Each luminaire type shall be binned within a three-step MacAdam Ellipse to ensure color consistency among luminaires.

E. Manufacturer's Qualifications: Firms regularly engaged in manufacture of interior LED Luminaires of sizes, types and ratings required, whose products have been in satisfactory use in similar service for not less than 10 years.

1.9 COORDINATION

A. Coordinate layout and installation of luminaires and suspension system with other construction that penetrates ceilings or is supported by them, including HVAC equipment, fire-suppression system, partition assemblies and other items indicated in section 1.5.A.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver luminaires in factory-fabricated containers or wrappings, which properly protect luminaires from damage.

B. Store luminaires in original packaging. Store inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, humidity, laid flat and blocked off ground.

C. Handle luminaires carefully to prevent damage, breaking, and scoring of finishes. Do not install damaged units or components; replace with new.

D. All luminaires shall be protected from damage during the installation. Any damaged luminaires, diffusers, glassware, sockets, stems and the like, shall be replaced with new parts, without additional cost to the Owner.

E. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering before shipping.

1.11 WARRANTY

A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires, emergency power units and exit signs that fail in materials or workmanship within one-year period from date of Substantial Completion.

B. [Or]Manufacturer’s Warranty: Five year(s) from date of Substantial Completion. Full warranty shall apply for first year and prorated warranty for the remaining four years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide product indicated on Drawings.

2.2 LUMINAIRE GENERAL REQUIREMENTS

A. It is the intent to provide and install a fully functional luminaire, and multiples thereof, on each and every outlet shown on the Drawings. Therefore, in the event a type designation is omitted from any luminaire indicated on the plans, provide units typical of those in similar locations within the scope of the project.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Factory-Applied Labels: Comply with UL 1598 and the requirements of all authorities having jurisdiction. Include recommended LED assemblies and drivers. Locate labels

where they will be readily visible to service personnel, but not seen from normal viewing angles when LED assemblies are in place.

1. Label shall include the following LED characteristics:

    a. "USE ONLY" and include specific LED type.
    b. LED assembly dimensions, shape, size, wattage, and coating.
    c. CCT and CRI.

D. Recessed luminaires shall comply with NEMA LE 4.

E. NRTL Compliance: Luminaires for hazardous locations shall be listed and labeled for indicated class and division of hazard by an NRTL.

F. Luminaires installed in hazardous locations shall be suitable for the area classification class, division and group.

G. Luminaires installed in corrosive locations shall be NEMA 4X rated.

H. Luminaires installed in wet locations shall be NEMA 3R rated.

I. Luminaires installed in damp locations shall be rated for damp location.

J. Luminaires installed in washdown areas shall be sealed and gasketed.

K. All luminaires shall be furnished complete with necessary devices and appurtenances to completely install luminaires in operating condition, including all hanging and supporting devices, plaster rings, studs, hickeys, canopies, stems, clamps, leveling devices, glassware, etc.

L. Nominal Operating Voltage: Operating Voltage for all luminaires shall be as indicated in Luminaire Schedule on the Drawings with a range of 108-132 volts for 120-volt circuits and 249-305 for 277-volt circuits.

M. LED Drivers and Modules shall include the following features unless otherwise indicated:
1. Light output lumens (lm) as indicated in the Luminaire Schedule.
2. Minimum allowable efficacy of 80 lm/W.
3. CRI: Minimum 85: As indicated on Luminaire Schedule.
4. CCT of maximum of 4000 K: As indicated on Luminaire Schedule.
5. Rated LED life of minimum 50,000 hours per IES L70.
6. Dimmable from 100 percent to 5 percent of maximum light output.
7. Internal LED driver.
8. User-Replaceable LED assembly’s:
9. Minimum efficiency: 90% at half and full load.
10. Minimum Operating Ambient Temperature: -20˚ C. (-4˚ F.)
11. Integral short circuit, open circuit, and overload protection.
12. Power Factor ≥ 0.85 at 50% load and ≥.90 at full load.
13. Total Harmonic Distortion: ≤ 20% at 50% load and ≤15% at 100% load.
14. Comply with FCC 47 CFR Part 15.

N. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit replacing LED assembly's without use of tools. Components are designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during replacing LED assembly's and when secured in operating position.

2.3 GENERAL REQUIREMENTS FOR EMERGENCY LUMINAIRES

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. NRTL Compliance: Fabricate and label emergency lighting units, exit signs, and batteries to comply with UL 924.

C. Comply with NFPA 70 and NFPA 101.

D. Comply with NEMA LE 4 for recessed luminaires.

2.4 EXIT SIGNS

A. General Requirements for Exit Signs: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with authorities having jurisdiction.

B. Internally Lighted Signs:
   1. AC Operation: LED's, 50,000 hours minimum rated life.
   2. Self-Powered Exit Signs (Battery Type): Integral automatic charger in a self-contained power pack.

      a. Battery: Sealed, maintenance-free, nickel-cadmium type.
      b. Charger: Fully automatic, solid-state type with sealed transfer relay.
      c. Operation: Relay automatically energizes LED from battery when circuit voltage drops to 80 percent of nominal voltage or below. When normal voltage is restored, relay disconnects LED's from battery, and battery is automatically recharged and floated on charger.
      d. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
      e. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
      f. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

2.5 EMERGENCY LIGHTING UNITS

A. General Requirements for Emergency Lighting Units: Self-contained units complying with UL 924.

1. Battery: Sealed, maintenance-free, lead-acid type.
2. Charger: Fully automatic, solid-state type with sealed transfer relay.
3. Operation: Relay automatically turns LED on when power-supply circuit voltage drops to 80 percent of nominal voltage or below. LED automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects LED's from battery, and battery is automatically recharged and floated on charger.
4. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
5. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
6. Wire Guard: Heavy-chrome-plated wire guard protects LED heads or fixtures.
7. Integral Time-Delay Relay: Holds unit on for fixed interval of 15 minutes when power is restored after an outage.
8. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

2.6 METAL FINISHES

A. Variations in finishes are unacceptable in the same piece. Variations in finishes of adjoining components are acceptable if they are within the range of approved Samples and if they can be and are assembled or installed to minimize contrast.

2.7 LUMINAIRE SUPPORT COMPONENTS

A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for channel and angle iron supports and nonmetallic channel and angle supports.

B. Single-Stem Hangers: 1/2-inch (13-mm) steel tubing with swivel ball fittings and ceiling canopy. Finish same as luminaire.

C. Support Wires: ASTM A641/A641M, Class 3, soft temper, zinc-coated steel, 12 gage (2.68 mm).

D. Rod Hangers: 3/16-inch (5-mm) minimum diameter, cadmium-plated, threaded steel rod.

E. Hook Hangers: Integrated assembly matched to luminaire, line voltage, and equipment with threaded attachment, cord, and locking-type plug.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before luminaire installation.

C. Examine walls, floors, roofs, and ceilings for suitable conditions where emergency lighting luminaires will be installed.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 TEMPORARY LIGHTING

A. If approved by the Owner’s representative, use selected permanent luminaires for temporary lighting. When construction is sufficiently complete, clean luminaires used for temporary lighting.

3.3 INSTALLATION

A. Provide a label on each luminaire outlet shown on the Drawings, the type of luminaire indicated and as specified in the "Luminaire Schedule" on the Drawings.

B. Each room/area shall have its luminaires controlled from a local switch for each circuit serving the room, where not controlled by an occupancy sensor. Provide local toggle switches so that all luminaires can be locally controlled, whether or not the switches are shown on the Drawings.

C. Install interior luminaires at locations and heights as indicated on the Drawings and in accordance with fixture manufacturer's written instructions, applicable requirements of NEC, NECA's "Standard of Installation," NEMA standards, and with recognized industry practices to ensure that luminaires fulfill requirements.

D. Coordinate construction and design of trim and supports for all stem mounted and recessed luminaires for conformity with ceilings in which the units are installed. Any special Work that may be required to overcome unusual difficulties in fitting the luminaire designs to particular locations, or to clear unforeseen obstacles, etc., shall be done without extra cost to the Owner.

E. Support all recessed luminaires, other than downlights from at least two diametrically opposite corners, independent of the ceiling structural system and directly to the building slab and/or primary structural steel. Fasten luminaires securely at all other points to the ceiling structural system. Do not fasten to any trades other than those indicated.

F. Securely support downlights from at least two points on the ceiling structural system. Do not fasten to other trades other than the ceiling structural system trade.

G. Support all surface and pendent luminaires independently of the ceiling structural system and directly to the building slab and/or primary structural steel. Provide pendant/surface fixtures longer than 2 feet with two hangers. Fasten luminaires securely at all other points to the ceiling structural system. Do not fasten to any trades other than those indicated. Ensure that pendant luminaires are plumb and level. Provide stem hanger with ball aligners and provisions for minimum one-inch vertical adjustment. Mount continuous rows of fixtures with an additional stem hanger greater than number of fixtures in the row.

H. Attach wall-mounted luminaires to structural members in walls. Do not attach luminaires directly to gypsum board.

I. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.

J. Supports:

1. Sized and rated for luminaire weight.
2. Able to maintain luminaire position after cleaning and replacing LED assembly.
3. Provide support for luminaire without causing deflection of ceiling or wall.
4. Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and a vertical force of 400 percent of luminaire weight.
5. Sized and rated for luminaire and emergency power unit weight.
6. Able to maintain luminaire position when testing emergency power unit.

K. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for wiring connections.

3.4 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.5 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
2. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.

B. Luminaire will be considered defective if it does not pass operation tests and inspections.

C. Prepare test and inspection reports.

3.6 STARTUP SERVICE

A. Upon completion of installation of interior luminaires, emergency power units and exit signs, and after building circuitry has been energized, apply electrical energy to demonstrate capability and compliance with requirements. Where possible, correct malfunctioning units at site, then retest to demonstrate compliance; otherwise, remove and replace with new units, and proceed with retesting.

3.7 EMERGENCY POWER UNIT AND EXIT SIGN CHARGING

A. Charge emergency power units and batteries minimum of one hour and depress switch to conduct short-duration test.

B. Charge emergency power units and batteries minimum of 24 hours and conduct one-hour discharge test.

3.8 CLEANING

A. Clean interior lighting fixtures of dirt and construction debris upon completion of installation. Clean fingerprints and smudges from lenses.

B. Protect installed fixtures from damage during remainder of construction period.

3.9 ADJUSTMENTS

A. When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting the direction of aim of luminaires to suit occupied conditions. Provide up to two visits to Project during other-than-normal hours for this purpose. Some of this work may be required during hours of darkness.

1. During adjustment visits, inspect all luminaires. Replace LED assembly’s, LED drivers, luminaires emergency power units, batteries and exit signs, that are defective.
2. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
3. Adjust the aim of luminaires in the presence of the Owner’s representative.

END OF SECTION 265119

SECTION 266001
Electric Vehicle Supply Equipment

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Provide all materials, equipment and perform all operations for complete installation of interior LED luminaires and related Work as indicated on the Drawings and specified herein, including but not limited to the following:

1. Interior Luminaires.
2. Emergency lighting units.
3. Exit signs.
4. Luminaire supports.

B. Related Sections:

1. Division 26

1.3 DEFINITIONS

A. ELECTRIC VEHICLE SUPPLY EQUIPMENT

1. Electric Vehicle Supply Equipment (EVSE), also referred to as "charging stations," encompasses the conductors, including the ungrounded, grounded, and equipment grounding conductors and the electric vehicle connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of delivering energy from the premises wiring to the electric vehicle (EV). There are three types of EVSE:

   a. Level 1 - Refers to a freestanding or wall mounted charging device that delivers a 110/120V charge, replenishing an EV battery at a rate of 4 to 6 miles of range per hour of charging time. Charging an EV at Level 1 typically takes between 7 and 20 hours depending on the size of the vehicle's battery.

   b. Level 2 - Refers to a freestanding or wall mounted charging device capable of being networked that delivers a 208/240V charge, replenishing an EV battery at a rate of 10 to 20 miles of range per hour of charging time.

Charging an EV at Level 1 typically takes between 2 and 5 hours depending on the size of the vehicle's battery.

c. Direct Current (DC) Fast Charging, a freestanding or wall mounted device capable of being networked that is designed to charge vehicles more quickly than Level 1 or Level 2 with an electrical output ranging between 40 kW - 120 kW delivering a charge of up to 480V. DC Fast Charging can typically replenish an EV battery at a rate of 50 to 90 miles of range per 30 minutes of charging time.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:

1. Include plans, elevations, sections, and mounting and attachment details.
2. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include diagrams for power, signal, and control wiring.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Provide a list of manufacturer recommended maintenance items required for EVSE Operation.

B. Operation and Maintenance Manuals
1. Submit in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA. Submit two manuals and electronic file at least 2 weeks prior to field training.

C. Spare Parts
1. Provide one spare cord and connector assembly for every three stations installed.

1.6 QUALITY ASSURANCE

A. Regulatory Requirements
1. In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" or "must" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction," or words of similar meaning, to mean the Contracting Officer. Provide equipment, materials, installation, and workmanship in accordance with the mandatory and advisory provisions of NFPA 70 unless more stringent requirements are specified or indicated.

B. Standard Products

1. Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design and workmanship and:
   a. Have been in satisfactory commercial or industrial use for 2 years prior to bid opening including applications of equipment and materials under comparable circumstances and of similar size.
   b. Have been on sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period.
   c. Where two or more items of the same class of equipment are required, provide products of a single manufacturer; however, the component parts of the item need not be the products of the same manufacturer unless stated in this section.

C. Qualifications
1. Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished.
2. Material and Equipment Manufacturing Date
   a. Provide products manufactured within 2 years prior to date of delivery to site. As a minimum, meet requirements of UL, where UL standards are established for those items, and requirements of NFPA 70 for all materials, equipment, and devices.
3. EVSE Installers
   a. Submit documentation certifying that pertinent personnel are qualified for EVSE installation. The documentation must include installation experience on two projects of comparable size and scope of work.

1.7 COORDINATION

A. Coordinate layout and installation of luminaires and suspension system with other construction that penetrates ceilings or is supported by them, including HVAC equipment, fire-suppression system, partition assemblies and other items indicated in section 1.5.A.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver luminaires in factory-fabricated containers or wrappings, which properly protect luminaires from damage.

B. Store luminaires in original packaging. Store inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, humidity, laid flat and blocked off ground.

C. Handle luminaires carefully to prevent damage, breaking, and scoring of finishes. Do not install damaged units or components; replace with new.

D. All luminaires shall be protected from damage during the installation. Any damaged luminaires, diffusers, glassware, sockets, stems and the like, shall be replaced with new parts, without additional cost to the Owner.

E. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering before shipping.

1.9 WARRANTY

A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires, emergency power units and exit signs that fail in materials or workmanship within one-year period from date of Substantial Completion.

B. [Or]Manufacturer's Warranty: Five year(s) from date of Substantial Completion. Full warranty shall apply for first year and prorated warranty for the remaining four years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide product indicated on Drawings.

2.2 ELECTRIC VEHICLE SUPPLY EQUIPMENT

A. System Description

B. Electric Vehicle Supply Equipment capable of charging multiple vehicles at Level 2.

C. Level 2 EVSE
1. 2.2.3.2 Level 2 Pedestal Mounted EVSE
a. UL 2202, UL 2251, UL 2231-1, UL 2231-2, UL 2594. Type 2, SAE J1772 connector, 208 volt, input 30 amps, output 30 amps, 7.2 kW.

D. 2.2.5 Cords
1. UL 62.
a. 14 feet, minimum, UL rated charging cords with integral retractable cord management mechanism or separate cord management.

2.3 CONNECTOR HOLSTER DOCK
a. Provide connector holster dock to store charger plugs when not in use. Holster construction consist of high strength injection molded plastic with temperature ratings of minus 30 deg C to 50 deg C. Provide holster to match EV plug.

2.4 PEDESTAL CONSTRUCTION

A. Provide corrosion resistant construction for outdoor use and continuous exposure to a marine environment. Pedestal shall be NEMA 3 Construction.

2.5 ACCESSORIES

A. Back-lit touch button interface keypad with audio feedback. LCD must display READY TO CHARGE, CHARGING, CHARGE COMPLETE, PAUSE-WAITING TO CHARGE AND FAULT.

B. Daylight readable 64x480 active matrix LCD with auto brightness control.

C. Activation of EVSE upon identification utilizing [magnetic swipe],[RFID][or barcode cards].

D. Real-time energy measurement controls.

E. Fifteen minute energy measurement interval recording.

F. Time-of-day pricing capability.

G. Nuisance tripping avoidance and auto-re-closure features.

H. Cold Load Pickup (Randomized auto restart following power outage).

I. Provide minimum four keycards/barcodes/RFID keys for each charger to activate the charger and its data network.

J. EVSE must include automatic web-based tracking / metering and control connection via a cell phone service provider compatible with Electric Vehicle Management system.

K. The web-based application shall generate per vehicle kW usage and charging times based on user input intervals.

L. EVSE Electronic Data Interface shall capture and be capable of push and pull file transfer of the parameters listed below. Web-based control capability shall enable remote charger station administration and access control by the Government. Data must be User ID and Password protected.
   1. Kilowatt (kW) data report must be compatible Microsoft Excel (Version 2007 or higher).
   2. Must have option to limit usage to designated users with bar code/key card type system (locked or open access).
   3. Manufacture control of EVSE is not allowed without prior written

2.6 MANUFACTURER'S NAMEPLATES

A. Each item of equipment shall have a nameplate bearing, as a minimum, the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable. Include additional information as applicable to fully identify the equipment. Nameplates shall be made of noncorrosive metal.

2.7 PAVEMENT MARKINGS

A. Provide pavement markings for the vehicle charging parking spots to indicate the restrictions for electrical vehicle parking.

2.8 ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE) SIGNAGE

A. Provide signage Electric Vehicle Supply Equipment per MUTCD and Base standards.

2.9 WHEEL STOPS AND BOLLARDS

A. Provide wheel stops or bollards in Electrical Vehicle parking spaces to provide protection for Electric Vehicle Supply Equipment. GENERAL

PART 3 - EXECUTION

3.1 INSTALLATION

A. Electrical installations shall conform to IEEE C2, NFPA 70, and to the requirements specified herein.
   1. The EVSE installer must be certified by the manufacturer or a recognized training facility to perform the installation.
   2. Provide chargers per manufacturer instructions and recommendations.
   3. EVSE must be programmed and configured by a certified installer.

3.2 GROUNDING

A. NFPA 70 and IEEE C2, except provide grounding systems with a resistance to solid earth ground not exceeding 25 ohms.

B. Grounding Electrodes
   1. Provide driven ground rods as specified in Section 33 71 02 UNDERGROUND ELECTRICAL DISTRIBUTION. Connect ground conductors to the upper end of ground rods by exothermic weld or compression connector. Provide compression connectors at equipment end of ground conductors.

3.3 FIELD APPLIED PAINTING

A. Where field applied painting of enclosures is required to correct damage to the manufacturer's factory applied coatings, provide manufacturer's recommended coatings and apply in accordance with manufacturer's instructions.

3.4 FIELD FABRICATED NAMEPLATE MOUNTING

A. Provide number, location, and letter designation of nameplates as indicated. Fasten nameplates to the device with a minimum of two sheet-metal screws or two rivets.

3.5 FOUNDATION FOR EQUIPMENT AND ASSEMBLIES

A. Exterior Location
   1. Mount on concrete slab, unless otherwise indicated. The slab shall be at least 8 inches thick, reinforced with a 6 by 6 - W2.9 by W2.9 mesh placed uniformly 4 inches from the top of the slab. Slab shall be placed on a 6 inch thick, well-compacted gravel base. Top of concrete slab shall be approximately 4 inches above the finished grade. Edges above grade shall have 1/2 inch chamfer. The slab shall be of adequate size to project at least 8 inches beyond the equipment. Provide conduit turnups and cable entrance space required by the equipment to be mounted. Seal voids around conduit openings in slab with water- and oil-resistant caulking or sealant. Seals shall be of sufficient strength and durability to protect all energized live parts of the equipment from rodents, insects, or other foreign matter. Cut off and bush conduits 3 inches above slab surface.

3.6 OPERATION AND MAINTENANCE

A. Operation and Maintenance Training
   1. Conduct a training course for the members of the operating staff as designated by the Contracting Officer. Make the training period consist of a total of 4 hours for Level 1 or level 2 of normal working time and start it after all work specified herein is functionally completed and the Performance Tests have been approved. Conduct field instruction that covers all of the items contained in the Operation and Maintenance Manuals as well as demonstrations of routine maintenance operations. Submit the proposed On-site Training Materials and schedule concurrently with the Operation and Maintenance Manuals and at least 30 days prior to conducting the training course.

3.7 RECORD DOCUMENTATION

A. Provide drawings indicating construction provided for this project. Provide electronic files and hard copies on 11 inch by 17 inch paper.

3.8 FIELD QUALITY CONTROL

A. Testing of Electric Vehicle Supply Equipment

B. Provide testing of Electric Vehicle Supply Equipment with test equipment per current standards and manufacturers recommendations. Provide data submittal indicating time of charge and kW level used.

C. Performance of Acceptance Checks and Tests
   1. Perform in accordance with the manufacturer's recommendations and include the following visual and mechanical inspections and electrical tests. Submit reports, including acceptance criteria.

D. EVSE
   1. Visual and mechanical inspection.
      a. Compare equipment nameplate data with specifications and approved shop drawings.
      b. Inspect physical and mechanical condition. Check for damage.
      c. Inspect anchorage, alignment, and grounding.
      d. Perform specific inspections and mechanical tests as recommended by manufacturer.
   2. Electrical Tests
      a. Perform resistance measurements through all bolted connections with low-resistance ohmmeter.
      b. Verify voltage levels.
      c. Check ground fault circuit interrupt.
      d. Check pilot signal detection and verification.
      e. Verify current limit.
      f. Verify operation of alarms.
      g. Verify EVSE Electronic Data Interface.
   3. Values of test shall be within limits of manufacturer's recommendations

END OF SECTION 266001

SECTION 271500 – COMMUNICATIONS CABLING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Specifications for instrumentation cables

B. Specifications for ProfiNet cables

C. Specifications for ethernet cables

D. Specification for optical fiber cables.

1.03 CITED STANDARDS

A. National Fire Protection Association (NFPA):
   1. 70, National Electrical Code (NEC)
   2. 70E Standard for Electrical Safety in the Workplace 2012
B. The Institute of Electrical and Electronics Engineers (IEEE)
C. International Society of Automation (ISA)
D. Telecommunications Industry Association (TIA)
E. Underwriters Laboratory (UL)
F. Insulated Cable Engineers Association (ICEA)
G. ProfiNet / ProfiBus Users Organizations

1.04 QUALITY CONTROL

A. The CONTRACTOR shall inspect all materials in the field for compliance with Contract requirements prior to compliance testing with the ENGINEER.

B. The CONTRACTOR shall demonstrate, to the satisfaction of the Owner’s ENGINEER, that materials meet the intent of the Contract Documents.

C. The Integrator shall remove or replace any materials or programming that do not comply with the Contract Documents.

D. All test equipment shall be calibrated in accordance with the manufacturer’s written documentation. The CONTRACTOR shall provide acceptable proof of calibration with all test reports.

1.05 ACTION SUBMITTALS

A. Submit in accordance with Section 01300:

1. Product data: for each type of product.

1.06 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Field quality-control reports.
C. Standard Test Record Sheets.

1.07 ABREVIATIONS

A. BICSI: Building Industry Consulting Service International.

B. EMI: Electromagnetic interference.

C. IDC: Insulation displacement connector.

D. LAN: Local area network.

E. RCDD: Registered Communications Distribution Designer.

PART 2 - PRODUCTS

2.01 GENERAL

A. Furnish network media products as indicated in the contract drawings and specifications.

B. All products shall meet all requirements stated in this specification.

2.02 INSTRUMENTATION CABLE

A. Manufacturers:
1. Belden.
2. Or approved equal.

B. Flame Rating: LSZH

C. Analog Control Cable
1. Analog signal cable (4-20 mA) shall be 18-gauge twisted shielded single pair tinned copper stranded conductors.
2. The pair shall have a minimum lay of 2 inches per twist.
3. The shield shall be aluminum-polyester with a 20 AWG stranded tinned copper drain wire and an overall Teflon jacket rated at 300 volts.
4. Color code shall be red and black.
5. Cable shall be suitable for plenum, conduit and submerged service.
6. Shields shall be properly grounded at each end.

D. Discrete Signal Wire
1. Soft drawn copper conforming to ASTM Standard B-3.

2. All wire shall be single conductor type unless otherwise indicated.
3. All wire shall be stranded in accordance with ASTM Standard B-8.
4. Instrumentation discrete signal wire shall be a minimum of #14 AWG.
5. Wiring within the panels shall be a minimum of #16 AWG.

2.03 ETHERNET COMMUNICATION

A. Manufacturers:
   a. Belden.

   b. Or Engineer Approved Equal. All request for substitutions shall be submitted with complete and thorough documentation of equivalency and submitted for approval no less than two weeks prior to bidding.

B. Description: CAT 6, 22awg, UTP (unshielded twisted pair) manufactured in accordance ANSI/TIA/EIA-568-B.2 and ANSI/ICEA S-80-576

C. Ethernet network isolators are required on all ethernet networks.

2.04 OPTICAL FIBER CABLE

D. Manufacturers:
   1. Belden
   2. Corning
   3. Or Engineer Approved Equal. All request for substitutions shall be submitted with complete and thorough documentation of equivalency and submitted for approval no less than two weeks prior to bidding.

E. Description: Multimode, 62.5/125 micrometer, 6 count minimum, nonconductive, tight buffer, optical fiber cable.
   1. Comply with ICEA S-83-596 for mechanical properties.
   2. Comply with TIA/EIA-568-B.3 for performance specifications.
   3. Comply with TIA-492AAAA-A for detailed specifications.
   4. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444, UL 1651, and NFPA 70 for the following types:
      a. General Purpose, Nonconductive: Type OFN or OFNG
      b. Plenum Rated, Nonconductive: Type OFNP, complying with NFPA 262.
      c. Riser Rated, Nonconductive: Type OFNR or OFNP, complying with UL 1666.
   5. Maximum Attenuation: 3.50 dB/km at 850 nm; 1.5 dB/km at 1300 nm.
   6. Minimum Modal Bandwidth: 160 MHz-km at 850 nm; 500 MHz-km at 1300 nm.

F. Jacket:
   1. Jacket Color:
      a. Orange for 62.5/125-micrometer cable.
   2. Cable cordage jacket, fiber, unit, and group color shall be according to TIA-598-C.
   3. Imprinted with fiber count, fiber type, and aggregate length at regular intervals not to exceed 40 inches (1000 mm).

G. Fiber optic connectors shall be ST type unless otherwise noted.

PART 3 - EXECUTION

3.01 GENERAL

A. Provide all labor, materials, field-test instruments and equipment required to complete the installation, testing and commissioning of the required Network Media in accordance with the contract documents

B. In order to conform to the overall project schedule, the CONTRACTOR shall survey the work area and coordinate cable testing with the other applicable trades.

END OF SECTION

SECTION 31 13 16
SELECTIVE TREE AND SHRUB PROTECTION AND TRIMMING

PART 1 - GENERAL

SCOPE
This Section includes the protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction. The contractor shall: Protect trees and plants indicated on the drawings to remain in location from all damage during construction. Do not injure trunks, branches or roots of trees and plants to remain. Perform cutting and pruning only as approved and as directed by the Owner's Project Representative.

PART 1 – GENERAL
Scope
Related Work
Definitions
Submittals
Quality Assurance
Project Conditions
PART 2 – MATERIALS
Topsoil
Organic Mulch
Tree Protection Zone Fencing
Tree Protection Zone Signage
PART 3 – EXECUTION
Examination
Preparation
Tree and Plant Protection Zones
Excavation
Root Pruning
Crown Pruning
Regrading
Field Quality Control
Repair and Replacement
Disposal of Surplus and Waste Materials

RELATED WORK
Applicable provisions of Division 1 govern work under this Section.

Section 02 41 13 - Demolition
Section 31 10 00 - Site Clearing
Section 31 13 00 – Selective Tree and Shrub Removal and Transplanting
Section 31 20 00 – Earthmoving
Section 31 23 16 13 – Trenching
Section 31 23 16 26 – Rock Removal
Section 31 23 19 – Dewatering
Section 31 25 00 – Erosion Control
Section 32 92 00 - Plants

DEFINITIONS
Arborist or Certified Arborist: As referenced here in all "arborists" or "certified arborists" shall be at minimum an ISA Certified Arborist or and ASCA Registered Consulting Arborist unless other specified.

Caliper: Diameter of a trunk in inches measured by a diameter tape at 4'-6" above the ground or DBH (diameter at breast height). (Standard as defined by the ISA – International Society for Arboriculture).

Tree Protection Zone (TPZ): Area surrounding individual trees or groups of trees to be protected during construction, and defined by calculating the critical root radius (crr). The crr is the tree trunk caliper (diameter in inches) at 4'-6" above the ground multiplied by 1.5, the result expressed in feet. The root protection zone is the outside edge of a concentric circle with the crr as its radius extending from the truck of the tree or as indicated on the drawings which ever is larger. Note that a particular tree/plant sensitivity or tolerance to construction disturbance may require a larger TPZ area than the area based on this calculation. This is to ensure that both the feeder and structural support roots are undamaged to maintain the integrity of the tree.

Vegetation: Trees, shrubs, groundcovers, grass and other plants.

SUBMITTALS

Product Data: For each type of product indicated.

Existing Tree and Plant Inventory and Condition Report: Documentation of existing trees and plantings by a certified arborist for the vegetation indicated to remain, which establishes preconstruction conditions and plant health. Arborist should also verify that none of the trees marked for protection are a potential hazard tree per ISA - International Society for Arboriculture standards.

Include detailed photographs or videotape.

Include notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

Indicate specimen trees and shrubs recommended for protection by the arborist that may not have been included in the tree protection plan.

Tree Pruning Schedule: Written schedule from arborist detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction. Include description of pruning to be performed and maintenance following pruning.

Tree Protection Plan:

Should correspond to the tree protection/site demolition plan which includes the trees and plants to be removed or protected and their related tree protection zones. Include species and size of tree or plant, location on plan, include unique identifier for each, indicate removal with an "x" through the plant symbol, indicate protection with the tree protection zone and fence location, indicate location of pruning of branches or roots outside of tree protection zones to avoid damage during construction or for the health of the tree, and include typical tree protection measures.

Maintenance Recommendations: From a certified arborist, for the care and protection of trees affected by construction during and after completing the Work. Written maintenance recommendations should be provided to the Owner and the Maintenance Contractor prior to the end of construction.

QUALITY ASSURANCE
Arborist Qualifications: An arborist certified by ISA-International Society of Arboriculture.

Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed temporary tree and plant protection work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.

Tree Pruning Standard: Comply with ANSI A300 Pruning Standards.

Tree Protection Standard: Reference and Comply with *"Arboriculture"*, Harris, Mathey and Clark, 3rd Edition, Simon & Schuster Adult Publishing Group, July 31, 1998, Sections: 7 – Modifying and Managing the Site, 10 – Special Management Situations, 11 – Preserving Existing Trees, 16 – Tree Hazard Management, 17 – Preventative Maintenance and Repair.
Protect Your Trees From Oak Wilt: Wisconsin Department of Natural Resources Forestry Division Publication PUB-FR-127 2009 for f Oak tree protection information.

Preinstallation Conference: Conduct conference at Project site. Before tree protection and trimming operations and construction activities begin, meet with OWNER'S Construction Representative, Agency Representative, Architect/Engineer, Arborist, Tree Service Firm and other concerned entities to review tree protection and trimming procedures and responsibilities. Review methods and procedures related to temporary tree and plant protection including, but not limited to, the following:

Construction schedule. Verify availability of materials, personnel, and equipment needed to make progress and avoid delays.

Enforcing requirements for protection zones.

Arborist's responsibilities.

Field quality control.

PROJECT CONDITIONS
The following practices are prohibited within tree protection zones:

Storage of construction materials, debris, or excavated material.
Parking vehicles or equipment.
Foot traffic.
Erection of sheds or structures.
Impoundment of water or excessive wetting.
Spillage of noxious material while mixing, placing or storing construction materials.
Excavation or other digging unless otherwise indicated.
Compaction of soil over root systems.
Fill in excess of one inch over tree roots.
Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

Do not direct vehicle or equipment exhaust toward tree protection zones.

Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

PART 2 - MATERIALS

TOPSOIL
Natural or cultivated top layer of the soil profile or manufactured topsoil: containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil;

reasonably free of subsoil, clay lumps, gravel, and other objects more than 1 inch (25 mm) in diameter; and free of weeds, roots, and toxic and other non-soil materials.

Obtain topsoil only from well-drained sites where topsoil is 4 inches (100 mm) deep or more; do not obtain from bogs or marshes.

Topsoil shall conform to the testing requirements and standards outlined in Section 32 91 13 Soil Preparation, or ASTM D5268 if Section 32 91 13 is not included in this project.

ORGANIC MULCH: Shredded hardwood, free of deleterious materials.

TREE PROTECTION ZONE FENCING
Fencing fixed in position and meeting the following requirements:

Galvanized-steel chain-link fencing fabricated from minimum 2-inch opening, 0.148-inch diameter wire chain link fabric; with pipe posts, minimum 1.9-inch OD line posts, and 2-3/8-inch OD Corner and pull posts; with 1-5/8-inch OD top rails and 0.177-inch diameter bottom tension wire; with tie wires, hog ring ties, and other accessories for a complete fence system. [4 foot] <Insert requirement> minimum height.

TREE PROTECTION ZONE SIGNAGE
Shop fabricated, rigid plastic or metal sheet with attachment holes prepunched and reinforced; legibly printed with nonfading lettering and as follows:

Sign Size and Text: [as shown on drawings] <Insert requirement>. TREE PROTECTION ZONE
Lettering: [3-inch] <Insert dimension> high minimum, <Insert color> characters on <Insert color> background.

PART 3 - EXECUTION

EXAMINATION
Erosion and Sedimentation Control: Examine the site to verify that temporary erosion and sedimentation control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree protection zones.

PREPARATION
Prior to all construction trees, shrubs and other plantings to be protected are to be fenced.

Locate and clearly identify trees, shrubs, and other vegetation to remain or to be relocated. [Flag] [Tie a 1-inch blue-vinyl tape around] each tree trunk at 54 inches above the ground.

Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

Tree Protection Zones: Mulch areas inside tree protection zones and other areas indicated.

Apply 2-inch average thickness of organic mulch. Do not place mulch within 6 inches of tree trunks.

TREE AND PLANT PROTECTION ZONES
Tree Protection Zone Fencing: Install protection zone fencing along edges of protection zones in a manner that will prevent people from easily entering protected area. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.

Tree Protection Zones include the canopy area above and beyond all tree protection areas as indicated in the construction documents. Canopy damage to protected vegetation is not acceptable. Contractor shall take extraordinary measures to protect tree canopies and trunks from aerial construction equipment and shall maintain an aerial clear zone over the tree for the extent of the entire tree protection area and beyond to the edge of each individual tree canopy. Tree protection zone fencing shall be erected before any construction activities commence and remain until construction has concluded and shall be installed and removed without harm to trees or shrubs. If trees scheduled to remain are injured notify OWNER'S Construction Representative immediately.

Chain-Link Fencing: Install to comply with ASTM F 567 and with manufacturer's written instructions.

Posts: Set or drive posts into ground one-third the total height of the fence without concrete footings. Where a post is located on existing pavement or concrete to remain, provide appropriate means of post support acceptable to OWNER'S construction representative. Other means of support may be required in archaeological areas where excavation is not allowed or where tree roots may be damaged. Alternative fence support not designated on the Tree Protection Plan / Details will need approval by Architect/Engineer and OWNER'S construction representative.

Tree Protection Zone Signage: Install protection zone signage in visible prominent locations in a manner approved by Architect/Engineer. Install one sign spaced approximately every [20 feet] [35 feet] [50 feet] <Insert dimension> on tree protection fencing, but no fewer than [four] <Insert number] signs each facing a different direction.

Maintain tree protection zones free of weeds and trash.

Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations. Repair should occur within 24 hours of the damage. Treat damaged trunks, limbs, and roots according to certified arborist's written instructions and Architect/Engineer's approval.

Maintain tree protection zone fencing and signage in good condition as acceptable to Architect/Engineer and remove when construction operations are complete and equipment has been removed from the site.

Do not remove tree protection fencing to allow for deliveries or equipment access through the protection zone.

Temporary access may be permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

Roots torn or damaged by construction operations shall be repaired according to the standards outlined in this section and by a certified arborist.

Silt fence may not be trenched within the Tree Protection Zone of any tree or shrub. In areas where silt fence is shown within Tree Protection Areas as indicated on drawings, silt fence shall be folded toward the flow direction and secured at grade-level by pinning or backfilling with a 6" layer of clear stone.

Contractors will be responsible for setting up tree maintenance programs to maintain trees and surfaces within construction boundaries for the duration of construction and until tree protection measures are completely removed from the site. This includes watering, preconstruction pruning, clearance pruning during construction, mowing, and re-mulching. Coordinate tree maintenance programs with OWNER'S Construction Representative.

EXCAVATION
General: Excavate at edge or beyond tree protection zones. Install shoring or other protective support systems to minimize sloping or benching of excavations.

Trenching near trees: Where utility trenches are required within tree protection zones, tunnel under the roots a minimum of 24" below the soil surface by drilling, auger boring, pipe jacking or digging by hand. Do not cut main lateral tree roots or tap roots; cut only smaller roots in the within the proposed utility line area. Cut roots as required for root pruning.

Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction as required for root pruning.

Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

ROOT PRUNING
Prune roots that are affected by temporary and permanent construction. Prune roots as follows:

Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.

Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.

Cover exposed roots with burlap and water regularly.

Backfill as soon as possible with topsoil or planting mixture as outlined in Section 32 91 13 Soil Preparation. Tamp to settle soil and eliminate voids and air pockets. When the area is approximately one-half filled with topsoil, water thoroughly then place the remaining topsoil required to fill around the exposed roots.

Root pruning at edge of tree protection zone: Prune roots 12 inches outside of the protection zone, by cleanly cutting all roots to the depth of required excavation.

CROWN PRUNING
Coordinate all pruning of trees and shrubs and/or repairs to damaged limbs with OWNER'S Construction Representative. Pruning shall be performed by a certified arborist.

Prune branches that are affected by temporary and permanent construction. Pruning should be the minimum necessary and not more than ¼ of the live foliage/branches of a mature tree. Prune branches as follows:

Prune trees to remain to compensate for root loss caused by damaging or cutting root system.

Prune the minimum amount necessary. Do not remove more than ¼ of the live foliage or branches of a mature tree.

Pruning standards: Prune trees according to ANSI A300 Pruning Standards.

Cut branches with sharp pruning instruments; do not chop or break.

Remove tree branches and dispose of off-site.

REGRADING
Grade Lowering: Where new finish grade is indicated below existing grade around trees slope grade away beyond tree protection zones. Maintain existing grades within tree protection zones.

Root Pruning: Prune tree roots exposed during grade lowering. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots with sharp pruning instruments; do not break or chop.

Minor Fill: Where existing grade is 1 inch or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations. Note raising grade within a tree protection zone should be minimal in area and depth and can be fatal to trees. No grade change is acceptable over Oak tree roots.

FIELD QUALITY CONTROL
Inspections: Engage a certified arborist to direct plant protection measures in the vicinity of trees, shrubs and other vegetation indicated to remain and to prepare inspection reports.

REPAIR AND REPLACEMENT
The value of trees destroyed or damaged will be charged against the account of the contractor responsible for the damage in an amount determined by the Owner's certified arborist using the ISA-International Society of Arboriculture, Council of Tree & Landscape Appraiser's Guide for Plant Appraisal, Current Edition. If a replacement tree is provided, the amount charged against the contractor will be reduced by the value of the replacement tree.

Repair trees, shrubs and other vegetation indicated to remain or be relocated that are damaged by construction operations, in accordance with a certified arborist's written instructions and approved by the project Architect/Engineer and OWNER'S Construction Representative.

Submit details of proposed root cutting and tree and shrub repairs.

Have certified arborist perform the root cutting, branch pruning, and damage repair of trees and shrubs.

Treat damaged trucks, limbs and roots according to certified arborist's written instructions.

Perform repairs within 24 hours.

Remove and replace trees, shrubs and other vegetation indicated to remain that die or are damaged during construction operations that a certified arborist determines are incapable of restoring to normal growth pattern and approved by the project Architect/Engineer.

Provide new trees of same size and species as those being replaced at a minimum 2 inches caliper size per ANSI Z.60.1.

Plant and maintain as specified in Division 32 Section 92 00 "Plants."

Soil Aeration: Aerate surface soil compacted during construction in lawn areas . Aerate compacted lawn areas beyond the tree protection zones. Drill 2-inch- (50-mm-) diameter holes a minimum of 12 inches (300 mm) deep at 24 inches (600 mm) on center. Backfill holes with an equal mix of augured soil and sand.

DISPOSAL OF SURPLUS AND WASTE MATERIALS
Disposal: Remove excess excavated material, displaced trees, trash and debris and legally dispose of them off Owner's property.

Burning of surplus and waste materials is not permitted.

END OF SECTION

SECTION 31 20 00
EARTHMOVING

PART 1 - GENERAL

SCOPE

The work under this section shall consist of providing all work, materials, labor, equipment, and supervision necessary to complete earthwork required in these specifications and on the drawings. Included are the following topics:

PART 1 - GENERAL
- Scope
- Related Work
- Reference Standards
- Quality Assurance
- Submittals
- Quantities

PART 2 - MATERIALS
- General
- Satisfactory Soils
- Unsatisfactory Soils
- Imported Select Soils
- Bedding
- Accessories

PART 3 - EXECUTION
- General
- Topsoil Removal
- Excavation
- Placing and Compacting Material
- Grading
- Grading Around Trees
- Soil Stabilization
- Clean Up

RELATED WORK

Applicable provisions of Division 1 govern work under this Section.

Related work specified elsewhere:
Section 30 05 00 – Common Work Results For All Exterior Improvements
Section 31 10 00 – Site Clearing
Section 31 22 16.15 – Roadway Subgrade Preparation
Section 31 23 16.13 – Trenching
Section 31 23 16.16 – Structure Excavation for Minor Structures
Section 31 25 00 – Erosion Control
Section 32 91 13 – Soil Preparation

REFERENCE STANDARDS

American Society for Testing and Materials (ASTM):

D422-63	Standard Test Method for Particle Size Analysis of Soils
D4318	Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils
D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3)
D1140	Standard Test Methods for Determining the Amount of Material Finer than 75-µm (No. 200) Sieve in Soils by Washing
D2922	Standard Test Methods for Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth)
D3017	Standard Test Method for Water Content of Soil and Rock In-Place by Nuclear Methods (Shallow Depth)
D4253	Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
D6913	Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
E329	Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

QUALITY ASSURANCE

The Contractor shall conduct sampling, testing, and analysis as required by this section and elsewhere in the Contract Documents either by retaining the services of an independent construction materials testing consultant or with internal certified testers. The materials testing personnel shall meet the requirements of ASTM E329.

The Contractor's construction materials testing personnel shall complete material testing as outlined in Table 31 20 00 -1.

Table 31 20 00 -1

Material	Test Required	Test/Sample Frequency
Imported Select Soil	ASTM D2487 Standard Classification of Soils for Engineering Purposes	1 test/500 CY placed
Imported Select Soil	ASTM D698 Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort	1 test/500 CY placed

SUBMITTALS

Provide copies of all material testing reports completed for the project within 48 hours of completing the individual tests. Along with each individual test result, provide a running spreadsheet of all individual test results.

QUANTITIES

Finished topsoil depth shall be 4", or as specified in Section 32 91 13 – Soil Preparation.

Contractor shall be solely responsible for determining all earthwork quantities based on the existing and proposed elevations provided on the drawings. Any geotechnical investigations provided by the Owner apply only to those locations that the data was collected, and may not be indicative of conditions elsewhere on the site. The Contractor is responsible for collecting any additional geotechnical or survey data he deems necessary to complete an accurate estimate of earthwork quantities.

If onsite grading, excavation and borrow operations do not provide enough suitable material for fill areas, Contractor shall coordinate and pay for excavation, transport and placement of imported material meeting the specifications of the contract documents. If excavation results in excess materials, Contractor shall coordinate and pay for loading, transport and offsite disposal of excess materials.

Contractor shall notify the OWNER'S Project Representative immediately if geotechnical information, existing grades, or proposed grades shown on the drawings appears to be inaccurate.

PART 2 - MATERIALS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: ASTM D2487 soil classification groups GW, GP, GM, SW, SP, and SM, or a combination of these group symbols; free of rock or gravel larger than 3" in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

1. The top 6 inches of satisfactory soil shall be free of all debris and any rock or gravel larger than ¼ inch in any dimension.

C. Unsatisfactory Soils: ASTM D2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT, or a combination of these group symbols.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2% of optimum moisture content at time of compaction.

D. Imported Select Soils: Naturally or artificially graded mixture of inorganic sands with no more than 20 percent passing a No. 200 sieve and with a plasticity index of no more than six.

E. Bedding: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940; except with 100% passing a 1" sieve and not more than 8% passing a No. 200 sieve.

2.2 ACCESSORIES
A. Detectable Warning Tape: Acid and alkali resistant polyethylene film warning tape manufactured for making and identifying underground utilities, minimum 6" wide and 4-mils thick, continuously inscribed with a description of utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30" deep; colored as follows:
1. Red: Electric
2. Yellow: Gas, oil, steam, and dangerous materials
3. Orange: Telephone and other communications
4. Blue: Water systems
5. Green: Sewer systems
6. Purple: Reclaimed water system

PART 3 - EXECUTION

GENERAL

Complete earthwork excavation for elevation changes, utility trenches, minor structures and building foundations in accordance with this section and the following applicable sections:

- Section 31 22 16.15 - Roadway Subgrade Preparation
- Section 31 23 16.13 - Trenching
- Section 31 23 16.16 - Structure Excavation for Minor Structures

TOPSOIL REMOVAL

Comply with erosion control requirements of Section 31 25 00 – Erosion Control and as shown on the plan relative topsoil removal and storage.

Complete clearing and grubbing work as required by the Contract Documents and as specified in Section 31 10 00 – Site Clearing.

Coordinate topsoil stockpile locations with Owner and other contractors working onsite.

Remove all topsoil from proposed locations of buildings, structures, roads, walks and other paved areas. Also, remove topsoil from proposed lawn or turf areas where the proposed elevation exceeds the existing elevation by 1' or greater, or where fill will be placed.

Stockpile reusable topsoil for use in restoration. Salvaged topsoil shall not be removed from the site without prior approval of the OWNER'S Project Representative.

Do not excavate, grade or work topsoil in frozen or muddy condition.

Minimize compaction of topsoil to the extent possible.

EXCAVATION

Excavate to the elevations shown on the drawings. Allow for placement of fill, base course, pavements, and topsoil as required by the drawings and other Contract Documents.

Transfer lines and grades as shown on the drawings.

Excavate areas to provide positive drainage. Contractor shall notify the OWNER'S Project Representative immediately if the final proposed elevations shown on the drawings do not provide drainage away from buildings, structures, roads, walks and other paved areas.

Remove excess and spoil material from the site in a timely fashion.

Do not excavate below design grades without prior authorization by the OWNER'S Project Representative.

PLACING AND COMPACTING MATERIAL

Place material in fill areas only after all topsoil has been removed.

Place fill to the elevations shown on drawings; allow for placement of base course, pavements and topsoil as required by the drawings and other Contract Documents.

Fill type shall be as indicated on Table 31 20 00 -2, or as shown on the drawings.

Do not place fill on areas consisting of organic soil, debris or soft and yielding material.

Do not place fill on frozen or muddy areas.

Moisture condition subgrade as necessary to provide a firm surface prior to placing fill.

Place fill in horizontal lifts having thickness as shown on Table 31 20 00 - 2.

Compact fill material as required by Table 31 20 00 - 2 for given use.

Moisture condition fill material as necessary to achieve density required for given use.

Place and compact backfill so as to minimize settlement and avoid damage to walls, utility lines and other work in place. Place backfill simultaneously on both sides of free-standing structures.

It is the responsibility of the Contractor to provide all necessary compaction equipment and other grading equipment that may be required to obtain the specified compaction. Compaction of controlled backfill by travel of grading equipment will not be considered adequate for uniform compaction. Hand guided vibratory or tamping compactors will be required whenever controlled backfill may be placed adjacent to walls, footings, and columns or in confined areas.

Table 31 20 00 -2

Location	Required Material	Maximum Compacted Lift Thickness	Minimum Proctor Compaction
Areas Beneath Footings, Floor Slabs, or Structures	Imported Select Soils	8”	100% Standard
Footing, Foundation and Structure Backfill	Imported Select Soils	8”	95% Standard
Areas within 10’ of Existing or Proposed Building or Structure Footing or Slab	Imported Select Soils	8”	95% Standard
Paved drive and parking areas	Imported Select Soils	8”	95% Standard
Turf Areas	Suitable Material	12”	90 % Standard

GRADING

Grading shall include areas necessary to establish new grades as required, additional areas disturbed by construction activities, storage, equipment including all trenching, where excess fill is deposited and where cutting is required.

New grades are designed to produce desired configuration of site and do not represent a balance between cut and fill.

Excavated materials shall be disposed of by contractor at a suitable off-site location. Contractor shall be responsible for securing suitable disposal site(s) and for all off-site disposal costs.

Grades not indicated shall be uniform levels or slopes between point elevations as shown. Adjust all grades as necessary to provide positive drainage away from structures.

Grades for earthwork shall not deviate from established elevations, as shown in excess of 1 inch unless otherwise directed by OWNER’S Project Representative.

Do all cutting, filling, compacting fill, and rough grading required to bring entire project to within respective base course elevations or 6 inches below finished topsoil elevations.

GRADING AROUND TREES

Limit excavation, filling and grading near trees or other vegetation to the extent possible. When tree roots are encountered, cut roots cleanly and squarely.

For trees within the grading limits that are to remain, install tree protection fencing as noted in the drawings.

CLEAN UP

Level off all waste disposal areas and clean up all areas used for the storage of materials or the temporary deposit of excavated earth. Remove all surplus material, tools and equipment.

Thoroughly clean all drainage ways, roads, parking lots, sidewalks, and paved surfaces and remove and dispose of all debris and mud.

END OF SECTION

SECTION 31 22 16.15
ROADWAY SUBGRADE PREPARATION

PART 1 - GENERAL

SCOPE

The work under this section shall consist of providing all work, materials, labor, equipment, and supervision necessary to complete pavement subgrade preparation and provide a surface ready for constructing and supporting the Dense Graded Base, as required in these specifications, on the drawings and as otherwise deemed necessary to complete the work. Included are the following topics:

PART 1 - GENERAL
- Scope
- Related Work
- Reference Documents
- Quality Assurance
- Permits/Fees

PART 2 - MATERIALS
- General

PART 3 - EXECUTION
- General
- Preparation
- Excavation
- Preparing the Foundation
- Subgrade Approval/Proof-Rolling
- Undercutting/Excavation Below Subgrade (EBS)
- Restoration

RELATED WORK

Applicable provisions of Division 1 govern work under this Section.

Related work specified elsewhere:
Section 30 05 00 – Common Work Results For All Exterior Work
Section 02 32 00 – Geo Technical Investigation
Section 03 30 00 – Cast-In-Place Concrete
Section 31 20 00 – Earthmoving
Section 31 23 16.13 – Trenching
Section 31 25 00 – Erosion Control
Section 32 11 23.33 – Dense Graded Base

REFERENCE DOCUMENTS

Alabama Department of Transportation (ALDOT) Standard Specifications (2022), Section 230 (Roadbed Processing, Improved Roadbed)

QUALITY ASSURANCE

The Contractor shall conduct sampling, testing, and analysis as required by this section and elsewhere in the Contract Documents either by retaining the services of an independent construction materials testing consultant or with internal certified testers. The materials testing consultant shall meet the requirements of ASTM E329.

The A/E and Contactor's construction materials testing personnel shall observe all proof-rolling operations. The OWNER'S Project Representative shall also be informed of all proof-rolling operations. Provide minimum of 48 hours confirmed notice for all parties.

PERMITS/FEES

Contractor shall be solely responsible for obtaining all permits necessary to complete the work. Contractor shall pay all fees associated with obtaining permits. These include, but are not limited to permits for work within public right-of-way, land disturbance permits and building permits.

PART 2 - MATERIALS

GENERAL

Alabama Department of Transportation (ALDOT) Standard Specifications (2022), Section 230 (Roadbed Processing, Improved Roadbed), and the recommendations contained in the project geotechnical report will govern the materials for this work.

PART 3 - EXECUTION

GENERAL

Alabama Department of Transportation (ALDOT) Standard Specifications (2022), Section 230 (Roadbed Processing, Improved Roadbed), and the recommendations contained in the project geotechnical report will govern the execution of this work.

PREPARATION

Review drawings and prepare work plan and schedule. Coordinate any necessary interruptions in site access with OWNER'S Project Representative, in accordance with other specification sections.

Remove topsoil from work area. Sawcut and remove pavement from work area as indicated on the drawings. Sawcuts shall be made for the full depth of pavement.

Grade roadways and parking areas to drain water away from buildings.

EXCAVATION

Excavate to elevations and dimensions as shown on the drawings and as necessary to complete construction. Excavations shall be sufficiently deep to provide for placement of Imported Select Soils per the project Geotechnical Report recommendations, and the depth of base course and pavement.

Stones over 6-inches in size shall be removed from the loosened portion of the subgrade.

Notify OWNER'S Project Representative if correction of unauthorized excavation or over-excavation is necessary. Said excavations will be corrected by placement of Dense Grade Base Aggregate. Contractor will be responsible for all costs associated with correcting these excavations.

Segregate the various materials excavated. Excavated material that does not meet the requirements of backfill and excess excavated material, shall be removed from the site and disposed by the Contractor, unless directed otherwise by other specification sections or the OWNER'S Project Representative.

Locate spoil piles so they do not interfere with public travel, adjacent landowners or other construction activities.

PREPARING THE FOUNDATION

The subgrade shall be constructed to have a uniform stability throughout. Construct the foundation to the required elevation with equipment and methods adapted for the purpose. Shape and compact to provide a smooth foundation, at required density, and at the proper elevation to receive the Dense Grade Base (See Section 32 11 23.33).

Compact material to minimize settlement and avoid damage to structures, pipes, utility lines and other features. Hand-place and compact material as necessary.

It is the responsibility of the Contractor to provide all necessary compaction equipment and other grading equipment that may be required to obtain a subgrade that satisfies the conditions of a satisfactory subgrade as defined below. Vibratory plate or tamping type walk behind compactors will be required whenever backfill is placed adjacent to structures, pipes, utility lines and other features.

The prepared foundation shall be tested for compaction as defined in the paragraph entitled 'Subgrade Approval / Proof Rolling'.

SUBGRADE APPROVAL / PROOF ROLLING

Prior to undercutting or excavating below subgrade (EBS) or placing any Dense Grade Base (See Section 32 11 23.33), contact the OWNER'S Project Representative to schedule inspection of the subgrade and proof rolling of the subgrade. All proof rolling shall be completed in accordance with the requirements of the paragraph entitled 'Quality Assurance' and shall meet the criteria as defined below.

To complete proof rolling, entire pavement subgrade shall be provided with a relatively smooth surface, suitable for observing soil reaction during proof rolling.

Contractor shall schedule and provide a fully loaded tri-axle dump truck for proof – rolling. Loaded truck shall have a minimum gross operating weight of 30 tons. Test shall be conducted with "tag" or "pusher" axles retracted from the ground.

Proof rolling shall be accomplished in a series of traverses parallel to the centerline of the driveway, street, or parking area. The truck shall traverse the length of the street or parking area once for each 12' of width at speeds less than 5 mph. Additional passes along the traverse shall be completed as directed by the OWNER'S Project Representative to further define unsatisfactory subgrade.

Soft areas, yielding areas, cracked areas or areas where rolling or wave action is observed shall be considered indicative of an unsatisfactory subgrade. Such areas shall be undercut as outlined in subsequent subsections of this specification.

Once the subgrade has been proof-rolled and approved, protect the soils from becoming saturated, frozen, or adversely altered.

UNDERCUTTING/EXCAVATION BELOW SUBGRADE (EBS)

Undercutting/EBS shall be completed where required in the project Geotechnical Report. Measure and document undercut areas and depths in consultation with OWNER'S Project Representative.

Excavate undercut areas to the depth specified by A/E or OWNER'S Project Representative using equipment with smooth cutting edge. Excavated undercut material that does not meet the specifications for fill needed elsewhere on site shall be removed from the site and legally disposed.

Undercut areas shall be backfilled with Imported Select Fill as indicated in the project Geotechnical Report.

Following installation and compaction of Imported Select Fill the area shall be subject to the work defined in the paragraph entitled 'Subgrade Approval / Proof – Rolling'.

Undercutting/Excavation Below Subgrade (EBS) work shall include all materials, labor, equipment and supervision necessary to remove the soils from the Project Site considered to be poor from the proof roll and backfill and compact with Imported Select Fill material brought to the Project Site. EBS shall be measured in its original position. The cost of the compacted Imported Select Fill is incidental to the unit price item for Undercutting/Excavation Below Subgrade (EBS).

RESTORATION

Roll all pavement subgrade surfaces using a smooth drum roller to promote an impervious surface and minimize percolation of water into the subgrade.

END OF SECTION

SECTION 31 25 00
EROSION CONTROL

PART 1 - GENERAL

SCOPE

The work under this section consists of providing all work, materials, labor, equipment, and supervision necessary to provide and construct erosion control measures necessary to protect property and the environment. Included are the following topics:

PART 1 - GENERAL
- Scope
- Related Work
- Reference Documents
- Erosion Control Plan

PART 2 - MATERIALS
- General
- Temporary Ditch Barriers
- Silt Fence
- Erosion Mat
- Staples
- Riprap
- Gabion Stone
- Soil Stabilizers
- Soil Tackifiers

PART 3 - EXECUTION
- General
- Grading and Earthwork
- Drainage
- Tracking Control
- Maintenance

RELATED WORK

Applicable provisions of Division 1 govern work under this Section.

Related work specified elsewhere:
Section 02 41 13 – Demolition
Section 30 05 00 – Common Work Results For All Exterior Improvements
Section 31 20 00 – Earthmoving
Section 31 22 16.15 – Roadway Subgrade Preparation
Section 31 23 16.13 – Trenching
Section 31 23 16.16 -- Structural Excavation for Minor Structures
Section 31 23 19 – Dewatering
Section 32 92 20 – Native Seeding

REFERENCE DOCUMENTS

Provide erosion control in accordance with the following references:

- Approved Product List, current version as published by ALDOT.

- Soil Erosion and Sediment Control Handbook, current version as published by ADEM.

Method of measurement and basis of payment sections in any referenced erosion control documents shall not apply to this contract.

EROSION CONTROL PLAN

The A/E has prepared an erosion control plan for the project. The Contractor will provide the A/E with submittals for materials used to implement the erosion control plan, as well as any modifications to the erosion control plan that are necessary due to the Contractor's means and methods of construction.

Contractor shall comply with all the requirements of the erosion control plan and the ADEM Construction General Permit. Contractor shall be responsible for completing all construction site inspection reports for the duration of the project and the Notice of Termination form required by ADEM.

PART 2 – MATERIALS

GENERAL

Erosion control products, including but not limited to, silt fence, wattles, and geotextile fabric, shall be listed on the ALDOT Approved Products List.

TEMPORARY DITCH BARRIERS

Rectangular bales of hay or straw, tightly bound with twine, not wire. Anchor stakes shall be "T" or "U" steel posts, or hardwood, 2-inches by 2-inches nominal. Rebar shall not be used for anchor bales.

Temporary ditch checks meeting the requirements of the ALDOT Approved Products List and installed per the manufacturer's instructions may be used in lieu of bales. Temporary ditch checks may also be classified as silt logs, silt logs, or wattles.

SILT FENCE

Fence fabric shall be in 3 foot tall rolls, with 4' tall 2" x 2" nominal cross section hardwood posts spaced a maximum of 10' o.c.

RIPRAP

Riprap shall be the class specified in the plan and shall conform to ALDOT Standard Specifications, Section 610. If a class is not specified in the plan, medium riprap shall be used.

PART 3 - EXECUTION

GENERAL

Install erosion control measures as required by the erosion control plan and contract documents. Provide additional erosion control measures as dictated by Contractor's means and methods, or by differing site conditions. Notify OWNER'S Project Representative of additional erosion control features that are provided, but not shown on the plan.

Contractor shall provide all erosion control measures necessary to protect property and the environment. Perform all work in accordance with manufacturer's instruction where these specifications do not specify a higher requirement.

GRADING AND EARTHWORK

Install all temporary or permanent erosion control measures prior to any onsite grading or land disturbances.

Clear only those areas designated for the placement of improvements or earthwork before placement of the final cover. Perform stripping of vegetation, grading, excavation, or other land disturbing activities in a logical sequence and manner which will minimize erosion. If possible, schedule construction for times of the year when erosion hazards are minimal.

Do not clear the site of topsoil, trees, and other natural ground covers before the commencement of construction. Retain natural vegetation and protect until the final ground cover is placed.

Do not stockpile soil within 25 feet of any roadway, parking lot, paved area, or drainage structure or channel. Provide temporary stabilization and control measures (seeding, mulching, covering, erosion matting, barrier fencing) for the protection of disturbed areas and soil piles which will remain unfinished for a period of more than 14 consecutive calendar days.

Remove surplus excavation materials from the site immediately after rough grading. The disposal site for the surplus excavation materials shall also be subject to these erosion control requirements.

DRAINAGE

Minimize water runoff and retain or detain on-site whenever possible so as to promote settling of solids and groundwater recharge.

Convey drainage to the nearest adequate public facility. Do not discharge water in a manner that will cause erosion or sedimentation of the site or receiving facility.

Protect storm sewer inlets and catch basins in accordance with the erosion control plan, if provided. If not specified, protect inlets with straw bale barriers, silt fencing, filter basket, gabion stone weepers, or other equivalent methods approved by the A/E which provide the necessary erosion protection.

Divert roof drainage and runoff from all areas upslope of the site around areas to be disturbed or channel them through the site in a manner that will not cause erosion.

Minimize the pumping of sediments when dewatering. Discharge to a sedimentation basin or sedimentation vessel to reduce the discharge of sediments. Do not discharge water in a manner that will cause erosion or sedimentation of the site or receiving facility.

TRACKING CONTROL

Provide each entrance to the site with a stone tracking pad.

If necessary, provide a crushed aggregate paved parking area.

If applicable, wash water shall be discharged to sedimentation basins, sedimentation vessels, or other such control areas. Untreated wash water shall not be discharged to storm sewers or surface water bodies.

MAINTENANCE

Inspect all erosion control measures within 24 hours of the end of each rainfall event that exceeds 0.25" or daily during period of prolonged rainfall, or weekly during periods without rainfall. Immediately repair and/or replace any and all damaged, failed, or inadequate erosion control measures.

Maintain records of all inspections and any remedial actions taken.

Maintain stockpile stabilization measures as necessary after rainfall events and heavy winds. Replace tarps, re-seed, and reapply mulch, tackifiers and stabilizers as necessary.

Remove sediment from stormwater and erosion control structures, basins and vessels as necessary.

Repair or replace damaged inlet protection.

Replace or supplement stone tracking pads with additional stone when they become ineffective.

Remove any sediment reaching a public or private roadway, parking lot, sidewalk, or other paved. Do not remove tracked sediments by flushing. Completely remove any accumulations not requiring immediate attention at least once daily at the end of the workday.

Frequently dispose of all waste and unused construction materials in licensed solid waste or wastewater facilities. Do not bury, dump, or discharge, any garbage, debris, cleaning wastes, toxic materials, or hazardous materials on the site, on the land surface or in detention basins, or otherwise allow materials to be carried off the site by runoff onto adjacent lands or into receiving waters or storm sewer systems.

END OF SECTION

SECTION 32 11 23.33
DENSE GRADED BASE

PART 1 - GENERAL

SCOPE

The work under this section consists of constructing a dense graded base using crushed stone or crushed gravel. The Contractor may also use crushed concrete, reclaimed asphaltic pavement, reprocessed material, or blended material. The work under this section shall provide a surface ready for constructing and supporting the Concrete or Asphalt Pavement.

PART 1 - GENERAL
- Scope
- Related Work
- Reference Standards
- Quality Assurance
- Submittals

PART 2 - MATERIALS
- Dense Graded Base

PART 3 - EXECUTION
- Construction
- Compaction
- Cleanup

RELATED WORK

Applicable provisions of Division 1 govern work under this Section.

Related work specified elsewhere:
Section 03 30 00 – Cast In Place Concrete
Section 30 05 00 – Common Work Results For Exterior Work
Section 31 22 16.15 – Roadway Subgrade Preparation
Section 32 12 16.13 -- Hot Mix Asphalt Paving
Section 00 00 00 – (Section Title)

REFERENCE STANDARDS

American Society for Testing and Materials (ASTM):

D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods
E329	Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

Alabama Department of Transportation (ALDOT) Standard Specifications (2022), Section 301 (Soil, Soil Aggregate, and Aggregate Base and Subbases)

Alabama Department of Transportation (ALDOT) Standard Specifications (2022), Section 306 (Density Requirements for Compaction)

Alabama Department of Transportation (ALDOT) Standard Specifications (2022), Section 825 (Crushed Aggregate Base Materials)

QUALITY ASSURANCE

The Contractor shall conduct sampling, testing, and analysis as required by this section and elsewhere in the Contract Documents either by retaining the services of an independent construction materials testing consultant or with internal certified testers. The materials testing personnel shall meet the requirements of ASTM E329.

The Contractor's construction materials testing personnel shall complete material testing as outlined in Table 32 11 23.33-1.

Table 32 11 23.33 -1

Material	Test Required	Test/Sample Frequency
Dense Graded Base	ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort	1 test/500 CY placed
Dense Graded Base	ASTM D6938 Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods	1 test/500 CY placed

SUBMITTALS

Provide copies of all material testing reports completed for the project within 48 hours of completing the individual tests. Along with each individual test result, provide a running spreadsheet of all individual test results.

PART 2 - MATERIALS

DENSE GRADED BASE

Material shall conform to ALDOT Section 825 dense graded base (Type B).

PART 3 - EXECUTION

CONSTRUCTION

Preparing the Foundation

Refer to Section 31 22 16.15 – Roadway Subgrade Preparation.

Placing Dense Graded Base Aggregate

Construct Dense Graded Base as specified in ALDOT Standard Specifications (2022) Section 301.

Construct the base to the width and section the drawings show. Shape, and compact the base surface to within 0.04 feet of the drawing elevation.

Ensure there is adequate moisture in the aggregate during placing, shaping, and compacting to prevent segregation and achieve adequate compaction. Moisture condition dense graded base as necessary to achieve required density as determined by ASTM D1557.

Excavation shall be reasonably free of water prior to placement of dense graded base. Do not place dense graded base on frozen surfaces or use frozen material.

Maintain the base until paving over it, or until the OWNER'S Project Representative accepts the work, if paving is not part of the contract.

COMPACTION

Compacting Dense Graded Base Aggregate

Compact Dense Graded Base as specified in ALDOT Standard Specifications (2022) Section 306.

If using a pneumatic roller, do not exceed a compacted thickness of 6 inches per layer. For the first layer placed over a loose sandy subgrade, the Contractor may, with A/E approval, increase the compacted layer thickness to 8 inches. If using a vibratory roller, do not exceed a compacted thickness of 8 inches per layer.

The material shall be compacted to meet the following:

Test Method to determine maximum density and moisture	ASTM D1557
Relative compaction relative to the optimum	95%
Moisture content relative to the optimum	-2% to +2%

The compacted material shall be tested for in-place field density in accordance with this Section, Part I, Quality Assurance.

CLEANUP

After the project is completed, thoroughly clean up all debris which may have accumulated during the placement of dense graded base and breaker run, if placed. All storm sewer manholes, inlets, and trench drains within the project area shall be inspected in the presence of the OWNER'S Project Representative and the A/E to confirm there is no accumulated debris. The Contractor shall ensure the manholes, inlets, and trench drains are free of water and debris prior to inspection by the parties noted above. Any accumulated debris in the manholes, inlets, and trench drains shall be removed and properly disposed of by the Contractor.

Replace or repair as required, all surfaces and/or landscape features damaged or disturbed under this item of work.

END OF SECTION

SECTION 32 12 16.13
HOT MIX ASPHALT PAVING

PART 1 - GENERAL

SCOPE

The work under this section shall consist of providing all work, materials, labor, equipment, and supervision necessary to provide and construct the paving and surfacing as provided for in these specifications and on the drawings. Included are the following topics:

PART 1 - GENERAL
- Scope
- Related Work
- Reference Documents
- Quality Assurance
- Submittals

PART 2 - MATERIALS
- Hot Mix Asphalt (HMA) Pavement
- Tack Coat

PART 3 - EXECUTION
- Hot Mix Asphalt (HMA) Pavement

RELATED WORK

Applicable provisions of Division 1 govern work under this Section.

Related Work Specified Elsewhere:
Section 30 05 00 – Common Work Results for all Exterior Work
Section 31 22 16.15 – Roadway Subgrade Preparation
Section 32 11 23.33 – Dense Graded Base

REFERENCE DOCUMENTS

Alabama Department of Transportation (ALDOT) Standard Specifications (2022), Section 106.09 (Quality Control and Quality Assurance (QC/QA) Requirements for Hot Mix Asphalt (HMA) Pavement)

Alabama Department of Transportation (ALDOT) Standard Specifications (2022), Section 306 (Density Requirements for Compaction)

Alabama Department of Transportation (ALDOT) Standard Specifications (2022), Section 401 (Bituminous Surface Treatments)
Alabama Department of Transportation (ALDOT) Standard Specifications (2022), Section 405 (Tack Coat)

Alabama Department of Transportation (ALDOT) Standard Specifications (2022), Section 410 (Asphalt Pavements)

Alabama Department of Transportation (ALDOT) Standard Specifications (2022), Section 424 (Superpave Bituminous Concrete Base, Binder, and Wearing Surface Layers)

QUALITY ASSURANCE

The Contractor is to conduct sampling, testing, and analysis as required by this section and elsewhere in the Contract Documents by retaining the services of an independent construction materials testing firm acceptable to the Owner. Contractor must maintain a quality control program in accordance with ALDOT Standard Specifications (2022), Section 106 to ensure that the asphalt produced meets the specified mix design and plan requirements.

The Contractor's construction materials testing personnel must complete non-destructive nuclear density testing as outlined in Table 32 12 16.13-1. Test results shall be provided to A/E and OWNER'S Construction Representative within 24 hours of being completed. All densities shall meet the requirements outlined in ALDOT Standard Specifications (2022), Section 424

Table 32 12 16.13 - 1

Layer	Test/Sample Frequency
Lower	3 random tests/5000 SF placed
Upper	1 random test/5000 SF placed

If density is below specified amount, submit proposed corrective action to OWNER'S Project Representative. Corrective action may consist of removal and replacement of deficient pavement or reduced payment, as agreed to by the OWNER'S Project Representative.

SUBMITTALS

Provide HMA pavement mix design reports for all mix designs to be used on the project. All mix designs shall meet the requirements outlined in ALDOT Sections 410 and 424.

PART 2 - MATERIALS

HOT MIX ASPHALTIC (HMA) PAVEMENT

Provide HMA pavement thickness and type as indicated on the plan and conforming to the requirements of ALDOT Sections 410 and 424. Utilize the same material type throughout the paving operation unless noted elsewhere on the drawings. Ensure all asphaltic materials provided under this section conform to the requirements of ALDOT Section 401.

TACK COAT

Apply tack coat at a minimum rate of 0.05 gallons per square yard to the lower layer(s) of HMA pavement surface prior to placing upper layer(s) of HMA pavement, unless otherwise noted. The surface shall be clean and dry prior to tack coat application. Tack coat shall meet the requirements of ALDOT Section 405.

PART 3 - EXECUTION

HOT MIX ASPHALT (HMA) PAVEMENT

Complete all work under this section to ALDOT Section 410 and Section 424. Provide HMA layer thicknesses as shown on the drawings.

END OF SECTION

SECTION 32 14 16: INTERLOCKING CONCRETE PAVERS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Interlocking Concrete Paver Units (manually installed).
   2. Limestone Bedding and Polymeric Joint Sand.
   3. Edge Restraints.

B. Related Sections:
   1. Section: Poured in place concrete

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM C 33, Standard Specification for Concrete Aggregates.
   2. C 67, Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile, Section 8, Freezing and Thawing.
   3. ASTM C 136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
   4. ASTM C 140, Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
   5. ASTM C 144, Standard Specification for Aggregate for Masonry Mortar.
   6. ASTM C 936, Standard Specification for Solid Concrete Interlocking Paving Units.
   7. ASTM C 979, Standard Specification for Pigments for Integrally Colored Concrete.
   8. ASTM D 698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,000 ft-lbf/ft3 (600 kN-m/m3)).
   9. ASTM D 1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
   10. ASTM C 1645, Standard Test Method for Freeze-thaw and De-icing Durability of Solid Concrete Interlocking Paving Units.
   11. ASTM D 2940, Specification for Graded Aggregate Material for Bases or Subbases for Highways or Airports.

B. Interlocking Concrete Pavement Institute (ICPI):
   1. ICPI Tech Spec Technical Bulletins

1.03 SUBMITTALS

A. In accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.

B. Manufacturer’s drawings and details: Indicate perimeter conditions, relationship to adjoining materials and assemblies, expansion and control joints, concrete paver layout, patterns, color arrangement, installation and setting details.

C. Sieve analysis per ASTM C 136 for grading of bedding and joint sand.

D. Concrete pavers:
1. Four representative full-size samples of each paver type, thickness, color, finish that indicate the range of color variation and texture expected in the finished installation. Color(s) selected by Landscape Architect, Architect, and Owner from manufacturer's available colors.
2. Accepted samples become the standard of acceptance for the work.
3. Test results from an independent testing laboratory for compliance of concrete pavers with ASTM C 936.
4. Manufacturer's catalog product data, installation instructions, and material safety data sheets for the safe handling of the specified materials and products.

E. Paver Installation Subcontractor:
1. A copy of Subcontractor's current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.
2. Job references from projects of a similar size and complexity. Provide Owner/Client/General Contractor names, postal address, phone, fax, and email address.

1.04 QUALITY ASSURANCE

A. Paving Subcontractor Qualifications:
1. Utilize an installer having successfully completed concrete paver installation similar in design, material, and extent indicated on this project.
2. Utilize an installer holding a current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.

B. Regulatory Requirements and Approvals: Specify applicable licensing, bonding or other requirements of regulatory agencies.

C. Mock-Ups:
1. Install a 7 ft x 7 ft (2 x 2 m) paver area.
2. Use this area to determine surcharge of the bedding sand layer, joint sizes, lines, laying pattern(s), color(s) and texture of the job.
3. This area will be used as the standard by which the work will be judged.
4. Subject to acceptance by owner, mock-up may be retained as part of finished work.
5. If mock-up is not retained, remove and properly dispose of mock-up.

1.05 DELIVERY, STORAGE & HANDLING

A. General: Comply with Division 1 Product Requirement Section.

B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers packaging with identification labels intact.
1. Coordinate delivery and paving schedule to minimize interference with normal use of buildings adjacent to paving.
2. Deliver concrete pavers to the site in steel banded, plastic banded or plastic wrapped packaging capable of transfer by forklift or clamp lift.
3. Unload pavers at job site in such a manner that no damage occurs to the product.

D. Storage and Protection: Store materials protected such that they are kept free from mud, dirt, and other foreign materials. Store concrete paver cleaners and sealers per manufacturer's instructions.
   1. Cover bedding sand and joint sand with waterproof covering if needed to prevent exposure to rainfall or removal by wind. Secure the covering in place.

1.06 PROJECT/SITE CONDITIONS
   A. Environmental Requirements:
      1. Do not install sand or pavers during heavy rain or snowfall.
      2. Do not install sand and pavers over frozen base materials.
      3. Do not install frozen sand or saturated sand.
      4. Do not install concrete pavers on frozen or saturated sand.

1.07 MAINTENANCE
   A. Extra Materials: Provide 5% additional material for use by owner for maintenance and repair.
   B. Pavers shall be from the same production run as installed materials.

PART 2 PRODUCTS

2.01 INTERLOCKING CONCRETE PAVERS
   A. Manufacturer: Hannover Architectural Products
      1. Contact:
   B. Interlocking Concrete Pavers:
      1. Paver Type: Prest Brick Pavers
         a. Material Standard: Comply with material standards set forth in ASTM C 936.
         b. Color: Submit samples for approval
         c. Color Pigment Material Standard: Comply with ASTM C 979.
         d. Size: 1 standard size – 60 mm thick.
         e. Average Compressive Strength (C140): 8000 psi (55 MPa) with non individual unit under 7200 psi (50 MPa) per ASTM C 140.
         f. Average Water Absorption (ASTM C 140): 5% with no unit greater than 7%.
         g. Freeze/Thaw Resistance (ASTM C 1645): 25 freeze-thaw cycles with no greater loss than 200 g/m2 of paver surface area or no greater loss than 500 g/m2 of paver surface area after 50 freeze-thaw cycles. Freeze-thaw testing requirements shall be waived for applications not exposed to freezing conditions.

2.02 PRODUCT SUBSTITUTIONS
   A. Substitutions: Product substitutions shall be submitted and approved 10 days prior to bid date.

2.03 BEDDING AND JOINT SAND

A. Provide bedding and joint sand as follows:

1. Bedding and joint sand shall be SEK PolySweep Polymeric Sand by SEK Surebond or Approved Equal.

PART 3 EXECUTION

3.01 ACCEPTABLE INSTALLERS

3.02 EXAMINATION

A. Acceptance of Site Verification of Conditions:

1. General Contractor shall inspect, accept and certify in writing to the paver installation subcontractor that site conditions meet specifications for the following items prior to installation of interlocking concrete pavers.
   a. Verify that subgrade preparation, compacted density and elevations conform to specified requirements.
   b. Verify that geotextiles, if applicable, have been placed according to drawings and specifications.
   c. Verify that base materials, thickness, compacted density, surface tolerances and elevations conform to specified requirements.
   d. Provide written density test results for soil subgrade,and base materials to the Owner, General Contractor and paver installation subcontractor.
   e. Verify location, type, and elevations of edge restraints, utility structures, and drainage inlets.
2. Do not proceed with installation of bedding sand and interlocking concrete pavers until subgrade soil and base conditions are corrected by the General Contractor or designated subcontractor.

3.03 PREPARATION

A. Verify base is dry, certified by General Contractor as meeting material, installation and grade specifications.

B. Verify that base is ready to support sand, and pavers and imposed loads.

3.04 INSTALLATION

A. Spread #89 Limestone evenly over the base course and screed to a nominal 1 in. (25 mm) thickness, not exceeding 1 1/2 in. (40 mm) thickness. Spread #89 Limestone evenly over the base course and screed rails, using the rails and/or edge restraints to produce a nominal 1 in. (25 mm) thickness, allowing for specified variation in the base surface.
   1. Do not disturb screeded sand.
   2. Screeded area shall not substantially exceed that which is covered by pavers in one day.
   3. Do not use #89 Limestone to fill depressions in the base surface.

B. Lay pavers in pattern(s) shown on drawings. Place units hand tight without using hammers. Make horizontal adjustments to placement of laid pavers with rubber hammers and pry bars as required.

C. Provide joints between pavers between [1/16 in. and 3/16 in. (2 and 5 mm)] wide. No more than 5% of the joints shall exceed [1/4 in. (6 mm)] wide to achieve straight bond lines.

D. Joint (bond) lines shall not deviate more than ±1/2 in. (±15 mm) over 50 ft. (15 m) from string lines.
E. Fill gaps at the edges of the paved area with cut pavers or edge units.
F. Cut pavers to be placed along the edge with a [double blade paver splitter or] masonry saw.
G. Adjust bond pattern at pavement edges such that cutting of edge pavers is minimized. All cut pavers exposed to vehicular tires shall be no smaller than one-third of a whole paver. Cut pavers at edges as indicated on the drawings.
H. Keep skid steer and forklift equipment off newly laid pavers that have not received initial compaction and joint sand.
I. Use a low-amplitude plate compactor capable of at least minimum of 4,000 lbf (18 kN) at a frequency of 75 to 100 Hz to vibrate the pavers into the sand. Remove any cracked or damaged pavers and replace with new units.
J. Simultaneously spread, sweep and compact dry polymeric joint sand into joints continuously until full. This will require at least 4 to 6 passes with a plate compactor. Do not compact within 6 ft (2 m) of unrestrained edges of paving units.
K. All work within 6 ft. (2 m) of the laying face must be left fully compacted with sand-filled joints at the end of each day or compacted upon acceptance of the work. Cover the laying face or any incomplete areas with plastic sheets overnight if not closed with cut and compacted pavers with joint sand to prevent exposed bedding sand from becoming saturated from rainfall.
L. Remove excess sand from surface when installation is complete.
M. Do not allow excess polymeric joint sand to remain on surface to protect pavers from damage from other trades.

Do not allow vehicular traffic on pavers with sand on top of the surface.

N. Surface shall be water clean after removal of excess joint sand.

3.05 FIELD QUALITY CONTROL

A. The final surface tolerance from grade elevations shall not deviate more than ±3/8 in. (±10 mm) under a 10 ft (3 m) straightedge.
B. Check final surface elevations for conformance to drawings.
C. The surface elevation of pavers shall be 1/8 in. to 1/4 in. (3 to 6 mm) above adjacent drainage inlets, concrete collars or channels.
D. Lippage: No greater than 1/8 in. (3 mm) difference in height between adjacent pavers.

3.06 CLEANING, SEALING, JOINT SAND STABILIZATION

A. Clean, Seal, Apply polymeric joint sand stabilization materials between concrete pavers in accordance with the manufacturer’s written recommendations.

3.07 PROTECTION

A. After work in this section is complete, the General Contractor shall be responsible for protecting work from damage due to subsequent construction activity on the site.

3.07 WARRANTY

A. All Work for a period of one year, starting on Date of Substantial Completion, against defects in material, workmanship and any repair required resulting from settling or breaking of pavers.
B. Repair unsatisfactory conditions promptly at no cost to Owner.
C. Emergency repairs may be made by Owner without relieving the Contractor of this warranty obligation.

PART 4.0 METHOD OF MEASUREMENT

4.01 METHOD OF MEASUREMENT

A. The interlocking concrete pavers shall be measured per these specifications and plans as per the specified unit below.

PART 5.0 PAYMENT

6.01 PAYMENT

A. The Pay Item listed below shall be considered complete and shall include all material (including base material, weeps, filter cloth, bedding/joint sand, pavers, etc. as represented in the drawings and specifications. Unit cost shall also include equipment, labor, installation costs, overhead and profit related to the installation of this item. Bidder shall verify quantities by his own take-off from the Drawings and notify the Landscape Architect and Engineer of discrepancies before submitting his Bid.

B. Bidder shall reference hardscape plans to ensure which paver areas are associated with various bid items.

END OF SECTION 32 14 16

Invisible Structures, Inc.
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September 2023

Grasspave2 Product Specification (CSI Format)

SECTION 32 14 43
POROUS UNIT PAVING
(Formerly 32 12 43 Porous Flexible Paving)

Notes: This section covers Grasspave2 Porous Pavement System from Invisible Structures. The system provides vehicular and heavy load support over grass areas while protecting grass roots from harmful effects of traffic.

The major components of the complete system are the Grasspave2 units, an engineered base course, Hydrogrow soil amendment/fertilizer, sand, and grass from seed, hydromulch, or sod.

Consult Invisible Structures, Inc. for assistance in editing this section for the specific application.

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Porous pavement system.

1.2 RELATED SECTIONS

A. Section 02 32 00 – Geotechnical Investigation
B. Section 31 20 00 – Earthm oving
C. Section 32 93 00 – Plants, Soil, Sod
D. Section 32 84 00 - Irrigation

1.3 REFERENCES

A. ASTM F 1951-08 Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.

B. ASTM D 638-10 Standard Test Method for Tensile Properties of Plastics

C. ASTM C 33 Standard Specification for Concrete Aggregates

D. AASHTO M6 Standard Specification for Fine Aggregate for Hydraulic Cement Concrete

1.4 SYSTEM DESCRIPTION

A. The Grasspave2 porous pavement system provides vehicular and pedestrian load support for grass areas, while protecting grass roots from harmful effects of traffic.

B. Major Components of the Complete System

1. Grasspave2 units, assembled in rolls.
2. Engineered sand and gravel base course.
3. Hydrogrow soil amendment and fertilizer, supplied with Grasspave2.
4. Sand fill or USGA greens mix.
5. Selected grass from seed, hydroseeding/hydro-mulching, or sod.
6. Selected topsoil (only for seeded installation).
7. Mulch (needed only for seeded or hydroseeded installations).

C. The Grasspave2 grass paving units, sand, and base course work together to support imposed loading.

D. The Grasspave2 grass paving units, Hydrogrow, and sand fill contribute to vegetation support.

1.5 SUBMITTALS

A. Submit under provisions of Section 01 30 00.

B. Shop Drawings: Submit design detail showing proper cross-section.

C. Samples: Submit manufacturer's sample of Grasspave2 10” x 10” section of Grasspave2 material.

D. Installation Instructions: Manufacturer’s printed installation instructions. Include methods for maintaining installed products.

E. Certificates:

1. Manufacturer signed certificate stating the product is made in the USA.
2. Submit Material Certificates for base course and sand (or USGA mix) fill materials
3. Product certificates signed by the manufacturer certifying material compliance of polyethylene used to make Grasspave2 units.
4. ISO Certificate certifying manufacturer’s quality management system is currently registered to ISO 9001:2008 quality standards.

F. Manufacturer’s Material Certification: Product manufacturers shall provide certification of compliance with all applicable testing procedures and related specifications upon written request. Request for certification shall be submitted by the purchasing agency no later than the date of order placement.

G. Manufacturer Quality Certification: ISO Certification certifying manufacturer's quality management system for its Grasspave2 system is currently registered to ISO 9001:2008 quality standards. Any alternate materials submitted shall provide a certification that their porous pavement system manufacturing process is part of an ISO program and a certification will be required specifically stating that their testing facility is certified and in accordance with ISO.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Protect Grasspave2 units/rolls from damage during delivery and store rolls upright, under tarp, to protect from sunlight, when time for delivery to installation exceeds one week.

C. Store Hydrogrow in a dark and dry location

D. Handling: Protect materials during handling and installation to prevent damage

1.7 MAINTENANCE SERVICE

Notes: Once healthy turf has been established, the cell wall structure will have minimal visibility when proper turf maintenance practices are followed.

A. Installer responsible for maintenance of grass plants – water/irrigation, fertilizing, mowing – for one growing season. DO NOT AERATE. See *Grasspave2 Maintenance Guide* from Invisible Structures

B. System to be maintained by Owner after one growing season.

1.8 Project Conditions

A. Maintain environmental conditions within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. Do not begin installation of porous pavements until all hard surface paving adjacent to porous pavement areas, including concrete walks and asphalt paving, is completed.

C. Install turf when ambient air temperatures is at least 55 degrees F (13 degrees C).

D. In cold weather, do not use frozen materials or materials mixed or coated with ice or frost, and do not build on frozen base or wet, saturated or muddy subgrade.

E. Protect partially completed paving against damage from other construction traffic when work is in progress.

F. Adequately water sod or grass seed to assure germination of seed and growth of root system.

G. Grass coverage on the sand-filled Grasspave2 rings must be completed within one week: See *Part 3 Execution*.

H. DO NOT DRIVE, PARK ON, or use Grasspave2 system for two or three mowing cycles until grass root system has matured (about 3 to 4 weeks for sod or 6 to 8 weeks for seeded areas). Any barricades constructed must still be accessible by emergency and fire equipment during and after installation.

1.9 LIMITED WARRANTY

A. Invisible Structures, Inc. (ISI) warrants to its purchasers that all products furnished by ISI will be free from defects in material and/or workmanship.
B. This warranty shall be extended for a period of five (5) years following the date of shipment by ISI.
C. Providing a written claim is presented to ISI within the warranty period and after inspection by ISI showing the materials have failed under this warranty, all defective materials shall be refurnished under this warranty, at no charge, excluding re-installation costs. This in lieu of all other warranties expressed or implied and is the sole warranty extended by ISI.
D. Our liability under this warranty is limited to the refurnishing of materials and does not include any responsibility for incidental, consequential, or other damages of any nature.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Invisible Structures, Inc., which is located at: 3510 Himalaya Rd. Suite 200 ; Aurora, CO 80011; Tel: 303-233-8383; Web: www.invisiblestructures.com.

2.2 GRASSPAVE2

A. Composition:
   1. Manufactured in the USA.
   2. High density polyethylene (HDPE): 100 percent recycled materials.
   3. Color: black
   4. Color Uniformity: Uniform color throughout all units rolls.
   5. Carbon Black for ultraviolet light stabilization.
   6. Hydrogrow soil amendment and fertilizer, provided by manufacturer with Grasspave2.
B. Performance Properties:
   1. Maximum Loading Capability: 15,940 psi (2.29 million psf, 109,906 kPa) when filled with sand.
   2. Wheelchair Access testing for ADA Compliance: Passing ASTM F 1951-08.
   3. Wheelchair Access testing for ADA Compliance: Passing Rotational Penetrometer testing.
   4. Tensile strength, pull-apart testing: 458 lbf/in from ASTM D638 Modified.
   5. System Permeability (Grasspave2, sand, base course): 2.63 to 38.55 inches of water per hour.
   6. Effective Imperviousness (E.I.): 10%.
C. Dimensions (individual units are assembled and distributed into rolls):
   1. Roll area: From 108 sq ft (10 sq m) to 538 sq ft (50 sq m), in 108 sq ft (10 sq m) increments
   2. Roll Widths: From 3.3 ft (1 m) to 8.2 ft (2.5 m), in 1.6 ft (0.5 m) increments.
   3. Roll Lengths: From 32.8 ft (10m) to 65.6 ft (20 m), in 3.3 ft (1 m) increments.
   4. Roll Weights: From 41 lbs (19kg) to 205 lbs (93kg), in 41 lbs (19 kg) increments.
   5. Unit Nominal Width by Length: 20 inches by 20 inches (0.5 m by 0.5 m) or 40 inches by 40 inches (1 m by 1 m).
   6. Nominal Depth: 1 inch (2.5 cm) – for rolls and individual units.
   7. Unit Weight: 18 oz (510 g) or 5 lbs. (2.27 kg).
   8. Volume Solid: 8 percent.

2.3 SYSTEM MATERIALS

Notes: All measurements are subject to manufacturing tolerances, unless otherwise specified.

A. Base Course: Sandy gravel material from local sources commonly used for road base construction (recycled materials such as crushed concrete or crushed asphalt are NOT acceptable).
   1. Conforming to the following sieve analysis and requirements:
      a. 100 percent passing sieve size 1 inch (25 mm).
      b. 80-100 percent passing sieve size 3/4 inch (19 mm).
      c. 60-80 percent passing sieve size 3/8 inch (9 mm).
      d. 40-60 percent passing sieve size #4.
      e. 25-40 percent passing sieve size #10.
      f. 5-25 percent passing sieve size #40.
      g. 0-5 percent passing sieve size #200.
   2. Provide a base course material nearly neutral in pH (range from 6.5 to 7.2) to provide adequate root zone development for turf.
   3. Material may be either "pit run" or "crusher run." Avoid using clay based crusher run/pit run. Crusher run material will generally require coarse, well-draining sand conforming to AASHTO M6 to be added to mixture (20 to 30 percent by volume) to ensure long-term porosity.
   4. Alternative materials such as crushed shell, limerock, or crushed lava may be used for base course use, provided they are mixed with sharp sand (20 to 30 percent) to ensure long-term porosity, and are brought to proper compaction. Without added sand, crushed shell and limerock set up like concrete and become impervious.
   5. Alternative size and/or composition of base course materials should be submitted to Invisible Structures, Inc. (Manufacturer) for approval.

B. Sand Fill for Rings and Spaces Between Rings: Clean sharp sand (washed concrete sand). Choose one of the following:
   1. Coarse, well-draining sand, such as washed concrete sand conforming to AASHTO M6 or ASTM C-33.
   2. United States Golf Association (USGA) greens, section - sand mix “The Root Zone Mixture.”

C. Turf Conditioner:
   1. Hydrogrow a proprietary soil amendment manufactured by Invisible Structures, Inc. and provided with Grasspave2.
   2. NO SUBSTITUTIONS.

Notes: Use grass species resistant to wear by traffic generally a Blue/Rye/Fescue mix used for athletic fields in northern climates, and Zoysia, Fescue, or Bermuda types in southern climates. Check with local sod and seed suppliers for preferred mixtures. Dedicated fire lanes can use same grass species used on surrounding turf. Parking applications require greatest wear-resistant species possible, generally available only by seed or hydroseeding/hydro-mulching.

D. Grass
   1. Sod: Use ½” thick rolled sod from a reputable local grower. Species should be wear resistant, free from disease, and in excellent condition. Sod shall be grown in sand or sandy load soils only. Sod grown in soils of clay, silt, or high organic materials such as peat, will not be accepted.

PART 3 EXECUTION

3.1 INSPECTION

A. Examine subgrade and base course installed conditions. Do not start porous paving installation until unsatisfactory conditions are corrected. Check for improperly compacted trenches, debris, and improper gradients.
B. For fire lane installations: prior to installing base course for turf paving, obtain approval of local fire authorities of sub-base.
C. Start of installation constitutes acceptance of existing conditions and responsibility for satisfactory performance. If existing conditions are found unsatisfactory, contact Architect for resolution.

3.2 PREPARATION

Notes: Ensure that subbase materials are structurally adequate to receive designed base course, wearing course, and designed loads. Generally, excavation into undisturbed normal strength soils will require no additional modification. Fill soils and otherwise structurally weak soils may require modifications, such as geotextiles, geogrids, and/or compaction (not to exceed 90%). Ensure that grading and soil porosity of the subbase will provide adequate subsurface drainage.

A. Subgrade Preparation:
    1. Prepare subgrade as specified in the project Geotechnical Report and the porous paving system manufacturer's instructions.
    2. Proper subgrade preparation will enable the Grasspave2 rolls/units to connect properly and remain level and stationary after installation.
    3. Excavate area allowing for unit thickness, the engineered base depth (where required), and 0.5 inch (1.25 cm) for depth of sod root zone or topsoil germination area (when applicable).
    4. Provide adequate drainage from excavated area if area has potential to collect water, when working with in-place soils that have poor permeability.
    5. Ensure in-place soil is relatively dry and free from standing water.
    6. Uniformly grade base.
    7. Level and clear base of large objects, such as rocks and pieces of wood.
B. Base Preparation:
    1. Install Base as specified in Section 32 10 00. Verify engineered base (if required) is installed in accordance with porous paving system manufacturer’s instructions.
    2. Coordinate base installation and preparation with subdrains specified in Section 33 46 00.
    3. If required, place a geotextile separation layer between the natural ground and the ‘engineered base’.
    4. If required, install the specified sub-drain and outlet according to construction drawings.
    5. Coordinate base installation and preparation with irrigation and drip irrigation lines specified in Section 32 84 00.
    6. Place engineered base in lifts not to exceed 6 inches (150 mm), compacting each lift separately to

95 percent Modified Proctor.

7. Leave 1 inch (2.5 cm) of depth below final grade for porous paver unit and sand fill and 0.5 inch (1.25 cm) for depth of sod root zone or topsoil germination area (when applicable).

3.3 ON-SITE MANUFACTURER'S FIELD REPRESENTATIVE

A. A qualified Manufacturer's field representative shall be available for a pre-construction meeting via phone or in person and will provide installation videos, design details, installation instructions, and the technical specifications.
B. The time for on-site observation shall be indicated in the Contract Documents and included in the base bid price.

3.4 HYDROGROW INSTALLATION

A. Spread all Hydrogrow mix provided (spreader rate = 4.53 kg per 100 m2 (10 lbs per 1076 ft2) evenly over the surface of the base course with a hand-held, or wheeled, rotary spreader.
B. The Hydrogrow mix should be placed immediately before installing the Grasspave2.

3.5 GRASSPAVE2 INSTALLATION

A. Install the Grasspave2 units by placing units with rings facing up, and using snap-fit connectors, pegs and holes, provided to maintain proper spacing and interlock the units. Units can be easily shaped with pruning shears or knife. Units placed on curves, slopes, and high traffic areas shall be anchored to the base course, using 40d common nails with fender washer, as required to secure units in place. Tops of rings shall be between 6 mm to 13 mm (0.25" to 0.5") below the surface of adjacent hard-surface pavements.
B. Install sand in rings as they are laid in sections by "back-dumping" directly from a dump truck, or from buckets mounted on tractors, which then exit the site by driving over rings already filled with sand. The sand is then spread laterally from the pile using flat bottomed shovels and/or wide "asphalt rakes" to fill the rings. A stiff bristled broom should be used for final "finishing" of the sand. The sand must be "compacted" by using water from hose, irrigation heads, or rainfall, with the finish grade no less than the top of rings and no more than 6 mm (0.25") above top of rings.

3.6 INSTALLATION OF GRASS

A. Grass coverage on the sand-filled rings must be completed within one week. Sand must be re-installed and leveled and Grasspave2 checked for integrity if rings become exposed due to wind, rain, traffic, or other factors. (Choose one paragraph below to meet grass installation method desired.)

1. Install thin sod directly over sand filled rings, filled no higher than the top of the rings. Sod strips should be placed with very tight joints. Sodded areas must be fertilized and kept moist during root

establishment (minimum of 3 weeks). DO NOT DRIVE ON SYSTEM: Sodded areas must be protected from any traffic, other than emergency vehicles, for a period of 3 to 4 weeks, or until the root system has penetrated and established well below the Grasspave2 units.

B. Adequately water sod to assure germination of seed and growth of root system.

3.7 PROTECTION

A. Sodded areas must be protected from any traffic, other than emergency vehicles, for a period of 3 to 4 weeks, or until the root system has penetrated below the Grasspave2 units.

3.8 FIELD QUALITY CONTROL

A. Remove and replace segments of Grasspave2 units where three or more adjacent rings are broken or damaged, reinstalling as specified, so no evidence of replacement is apparent.
B. Perform cleaning during the installation of work and upon completion of the work. Remove all excess materials, debris, and equipment from site. Repair any damage to adjacent materials and surfaces resulting from installation of this work.

3.9 MAINTENANCE

A. Maintain grass in accordance with manufacturer's instructions and as specified in Section 32 92 00 Manufacturers of Turfs and Grasses.
B. Lawn Care: Normal turf care procedures should be followed, including de-thatching.
C. DO NOT AERATE. Aerator will damage the Grasspave2 units. Aeration in not necessary in a sand root zone.
D. When snow removal is required, keep a metal edged plow blade a minimum of ¾ inch (17 mm) above the surface during plowing operations to avoid causing damage to the Grasspave2 units, or
    1. Use a plow blade with a flexible rubber edge, or
    2. Use a plow blade with skids on the lower outside corners set so the plow blade does not come in contact with the units.

END OF SECTION

SECTION 32 17 23
PAVEMENT MARKINGS

PART 1 - GENERAL

SCOPE

The work under this section consists of providing all work, materials, labor, equipment, and supervision necessary to provide and install pavement markings as provided for in these specifications and on the drawings. Included are the following topics:

PART 1 - GENERAL
- Scope
- Related Work
- Reference Documents
- Submittals

PART 2 - MATERIALS
- Pavement Markings

PART 3 - EXECUTION
- Pavement Markings

RELATED WORK

Applicable provisions of Division 01 govern work under this Section.

Related Work Specified Elsewhere:
Section 30 05 00 – Common Work Results For All Exterior Improvements

REFERENCE DOCUMENTS

Alabama Department of Transportation (ALDOT) Standard Specifications, Section 701 (Traffic Stripe)

Alabama Department of Transportation (ALDOT) Standard Specifications, Section 703 (Traffic Control Markings and Legends)

SUBMITTALS

Submit the manufacturer specifications for each pavement marking. The submittal for each material shall include the following at a minimum:

- Pavement Marking Material and Manufacturer
- Color and Batch Number
- Date Manufactured (Material more than one year old will not be accepted)
- Manufacturer Name and Address.

PART 2 - MATERIALS

PAVEMENT MARKINGS

Furnish Class 2 (thermoplastic) pavement markings conforming to ALDOT Sections 701 and 703.

PART 3 - EXECUTION

PAVEMENT MARKINGS

Prepare surface to receive markings and install them in accordance with ALDOT Section 701 and 703.

Apply pavement markings at the locations and to the dimensions and colors as shown on the drawings. If not otherwise specified, marking lines shall be yellow and have a minimum width of 4 inches.

Apply pavement markings at a rate per the manufacturers recommended application rate based on the temperature and surface material.

END OF SECTION

SECTION 323300 – HARDSCAPE
(SITE FURNISHINGS & SIGNAGE)

PART 1 GENERAL

1.1 SUMMARY

A. Specific requirements concerning the various materials, structures, and arrangements which are safe to be installed are shown on drawings.

B. These hardscape materials may include, but are not limited to, site signage, bollards, wayfinding, bike racks, benches, water fountains and trash receptacles.

1.2 DO NOT MAKE SUBSTITUTIONS

A. If Contractor desires to make substitutions of materials, sufficient descriptive literature and material samples must be furnished to establish the material as an equal substitute. In addition, Contractor must state his reasons for desiring substitute materials. Submit this request and information to Landscape Architect.

1.3 APPROVAL AND SELECTION OF MATERIALS AND WORK

A. The selection of all materials and execution of all operations required under the Drawings and Specifications is subject to the approval of Owner and Landscape Architect. They have the right to reject any and all materials and any and all Work which, in their opinion, does not meet requirements of the Contract Documents at any state of operations. The Contractor is to remove rejected work and or materials from Project Site and replace promptly.

B. Delivery, Storage and Handling: Deliver material and equipment in such a manner as to not damage parts or decrease the useful life of equipment.

C. Store materials away from detrimental elements.

D. Handle, load, unload, stack and transport materials carefully to avoid damage.

1.4 QUALITY AND SIZE

A. Material specified by name and/or model number in the Specifications, on the site or detailed drawings are used for the purpose of identification of materials and to insure specific use of that material in the construction of the system. No substitutions will be permitted without approval.

C. Any products not specifically identified on the drawing with a make and/or model number in the Specifications or on the site or detailed drawings shall be submitted in a shop drawing format to the Landscape Architect for approval.

PART 2 ACCEPTANCE AND GUARANTEE

2.1 SUMMARY

A. Substantial Completion: Submit written requests for inspection for Substantial Completion to Landscape Architect at least three calendar days prior to anticipated Date of Inspection and Testing. Substantial Completion cannot be granted and at the same time no further applications for payment shall be approved for more than 85% of contract until there has first been a walk-thru for head coverage at which time a "punch list" will be written consisting of items to be addressed and corrected by Contractor immediately. Depending on the extent of the Work on the "punch list", the Landscape Architect will determine the job to be Substantially Complete or pending the completion of the "punch list".

B. Review "punch list" Work jointly with Owner and Landscape Architect for Substantial Completion of total (contract) Work.

2.2 DATE OF SUBSTANTIAL COMPLETION

A. Date of Substantial Completion will constitute beginning Date of One-Year Guarantee. This Date also constitutes the beginning of the warranty responsibilities and acceptance by Owner and Landscape Architect.

2.3 GUARANTEE

A. All Work, products, equipment and materials for one year, beginning at Date of Substantial Completion as per (AIA Certificate of Substantial Completion/written letter of notification).

B. Make good any damage, loss, destruction or failure. Repairs and replacements shall be done promptly and at no additional cost to Owner.

C. Repair damage to grade, plants and other Work or property as necessary.

D. If work is not acceptable during or at end of Guarantee Period Owner may elect either subsequent replacement or credit. Replacement products shall have a similar one-year guarantee from time of replacement.

PART 3.0 METHOD OF MEASUREMENT

3.1 METHOD OF MEASUREMENT

A. All items to be installed or replaced are indentified in the plans and details.

PART 4.0 PAYMENT

4.1 PAYMENT

A. The Pay Items for site furnishings and signage shall determine the value of extra work or changes in the work, as applicable. They shall be considered complete and shall include all material, equipment, labor, installation costs, overhead and profit. Pay items shall be used uniformly for additions or deductions. The final amount paid for the work done will be the sum of the actual quantities of installed work, as approved in writing by the Owner. Bidder shall verify quanitities of installed work, as approved in writing by the Owner. Bidder shall verify quantities by his own take-off from the Drawings and notify the Landscape Architect of discrepancies before submitting his Bid.

END OF SECTION 02805

SECTION 328400 – PLANTING IRRIGATION

PART 1 GENERAL

1.1 SUMMARY

A. Extent of underground irrigation system is shown on Drawings and in the schedules.

B. Provide all labor, materials and equipment required by or inferred from Drawings and Specifications to complete the Work of the Section.

C. Provide additional Work and materials required by local authorities at no extra cost to Owner.

D. Contractor shall provide all permits, applications, licenses, and other qualifications to complete work at no additional cost to owner.

E. Reference Standards: American Society for Testing and Materials, Annual Book of ASTM Standards, latest edition.

F. Related work: Section 329300 – Plants, Soil, & Sod

1.2 CONTRACTS

A. Irrigation Work to a single firm specializing in irrigation installation, acceptable to Landscape Architect.

1.3 CODES AND STANDARDS

A. Perform Irrigation Work in compliance with applicable requirements of governing authorities having jurisdiction. County regulations supersede these specifications. Notify Landscape Architect in writing of all discrepancies immediately.

1.4 DO NOT MAKE SUBSTITUTIONS

A. If Contractor desires to make substitutions of materials, sufficient descriptive literature and material samples must be furnished to establish the material as an equal substitute. In addition, Contractor must state his reasons for desiring substitute materials. Submit this request and information to Landscape Architect.

1.5 APPROVAL AND SELECTION MATERIALS AND WORK

A. The selection of all materials and execution of all operations required under the Drawings and Specifications is subject to the approval of Owner and Landscape Architect. They have the right to reject any and all materials and any and all Work which, in their opinion, does not meet requirements of the Contract Documents at any state of operations. Contractor to remove rejected Work and or materials from Project Site and replace promptly.

B. "As-Built" Drawings: Any changes in layout and/or arrangements of the proposed irrigation system, or any other differences between proposed system and actual installed conditions are to be recorded by Irrigation Contractor in the form of an "As-Built" Drawings are to be clearly and neatly drawn on CAD drawing of original design provided by Landscape Architect. Provide Owner and Landscape Architect with a reproducible copy of the "As-Built" Drawings before Work under this Contract will be considered for acceptance. All automatic and manual valves, hose bibs or quick couplers and wire splice shall be shown with actual dimensions to reference points so they may be located easily in the field. Submittal of approved "As-Built" Drawings will preclude any Application for Final Payment by Contractor.

C. Delivery, Storage and Handling: Deliver material and equipment in such a manner as to not damage parts or decrease the useful life of equipment.

D. Store materials away from detrimental elements. Coordinate with General Contractor to secure a safe staging area.

E. Handle, load, unload, stack, and transport materials for irrigation system carefully to avoid damage. Handle pipe in accordance with Manufacturer recommendations.

1.6 VERIFY TAP

A. Test water conditions as they exist immediately down stream from tap: If they do not meet design demands, notify Landscape Architect immediately of existing conditions.

B. The irrigation system is designed to operate under the following conditions: a minimum of 60 psi of water pressure at tap and at least 45gpm available water supply tap & meter by Irrigation Contractor.

C. Job Conditions: Insurance on irrigation materials or equipment stored or installed as the responsibility of Irrigation Contractor. Such insurance shall cover fire, theft, and vandalism. Should Contractor elect not to provide for such insurance, he will in no way hold Owner responsible for any losses incurred by the aforementioned acts. The Contractor is responsible for all costs incurred in replacing damaged or stolen materials.

D. Obtain all required permits and pay all required fees, at no additional cost to Owner. Any penalties imposed due to failure to obtain permits or pay fees are the responsibility of the Contractor.

E. Provide and maintain all passageways, guard fences, warning lights and other protection devices required by local authorities.

F. Existing site improvements shall be performed in a manner which will avoid possible damage. The Contractor is responsible for any damage of a mechanical nature as well as damage resulting from leaks in irrigation system whether due to negligence or otherwise.

G. Damages resulting from irrigation installation to Work of other trades must be repaired at the expense of Contractor in a timely fashion.

H. Make adjustments to system layout as may be required and requested to provide complete coverage at no additional cost to Owner.

I. Keep project site clean and orderly at all times during construction.

1.7 WARRANTY

A. All Work for a period of one year, starting on Date of Substantial Completion, against defects in material, equipment, Workmanship, and any repair required resulting from leaks or other defects of workmanship, material, or equipment.

B. Repair unsatisfactory conditions promptly at no cost to Owner.

C. Emergency repairs may be made by Owner without relieving the Contractor of this warranty obligation.

D. Contractor to repair settling of backfilled trenches occurring during warranty period, including restoration of damaged plantings, paving or improvements resulting from settling of trenches or repair operations.

E. Respond to Owner's request for repair Work within ten days. If not, Owner may proceed with such necessary repairs at Contractor's expense. In addition, Contractor shall be held responsible for replacement of any plant material (tree, shrubs, sod, or seed) which becomes damaged or dies due to a lack of water during periods in which irrigation system is inoperable.

PART 2 PRODUCTS

2.1 SUMMARY

A. Specific requirements concerning the various materials and arrangements which are safe to be installed are shown on drawings.

2.2 QUALITY AND SIZE

A. Material specified by name and/or model number in the Specifications, on the site or detailed drawings are used for the purpose of identification of materials and to insure specific use of that material in the construction of the system. No substitutions will be permitted without approval. (See Substitutions).

B. Plastic pipe for all main lines is schedule 40 PVC while laterals 1 ½" size and over is Class 200 PVC Type 1120 or 1220 as manufactured Cabot, John-Mansville (or approved equal) unless otherwise specified herein or on the drawings. All pipe, 1" size and less, is Class 160.

C. PVC pipe is to be continuously marked with Manufacturer's identification, type, class, and size and installed with these markings on the top of the pipe.

D. All fittings should be Schedule 40 PVC Type 1, of domestic manufacture and identified as to pressure rating or schedule.

E. Solvent Weld: Solvent weld for PVC pipe over 20' length must be installed with standard 20' length sections. Unnecessary joints or couplings are not acceptable.

F. Risers: Provide threaded Schedule 80 PVC risers. All risers above grade to be either dark gray or black PVC pipe.

G. Electric Wiring: All 110-volt AC wiring to controller must consist of three wires: one black, one white and one ground. Electrical service to be provided by General Contractor unless otherwise directed by Owner.

H. All splices in controller wiring shall be waterproofed by using Rainbird "Snap-Tite" wire connectors.

I. All control wiring shall be 24-volt solid wire U>L> approved for direct burial in ground. Minimum wire size: 14 gauge.

J. All control wiring and wiring connections from controller to valves shall be included in this contract.

K. Sprinkler Heads: Provide as indicated on the plan. Heads perform to Manufacturer's specifications concerning radius of throw and gallon at given pressure.

L. Automatic Controller: Is to be installed in the location schematically shown on drawings but identified by owner's representative in the field. The controller location will be accessible as shown on drawing for maintenance. Provide for the possibility of making minor timing adjustments to the controller in the field.

M. Provide controller specified on drawing, fully automatic capability as well as manual operation of the system.

N. Provide controller specified on drawing which operates on a minimum of 110 volts AC power input and is capable of operation of 24-volt AC electric remote-control valves, with a reset circuit breaker to protect from overload. Contractor is responsible for connection to 100V AC power to controller.

2.3 STATIONS

A. Each station shall have a time setting knob, which can be set for variable timing in increments from 6 to 60 minutes or set to omit the station from irrigation cycle.

2.4 THE CONTROLLER

A. The irrigation system shall be as specified on the drawings.

2.5 WATER METER

A. Type approved by City where shown on drawing. Verify location with owner's representative in the field.

B. Costs of irrigation water meter(s) shall be included in the contractors bid.

2.6 BACKFLOW PREVENTER

A. Submit Double Check Assembly Backflow Preventer cut sheets for approval. The backflow preventer is a double check valve assembly type, capable of having a flow rate of 80 gpm, with a pressure loss not to exceed 5 psi and suitable for supply up to 150 psi. The backflow preventer body to be bronze, internal parts stainless steel and check valve assemblies with tight seating rubber. The backflow preventer assembly must include two-gauge valves for isolating unit and two ball valve test clocks for testing unit to insure proper operation.

2.7 PRESSURE REGULATOR

A. Provide Wilkins #600 or equal. Install outside of the building for easy access and adjustment.

B. Mastervalve: Rainbird # electric remote control valve w/brass body and bonnet. Valve shall be wired to open and close with each circuit valve. Size based on mainline.

2.8 VALVE BOXES

A. Ametek 12" rectangular valve box with cover or jumbo mechanical box with cover and Ametec 10" round valve box with cover as indicated on drawings. Place a minimum of 6" depth of gravel under each valve box, meter, pressure regular and backflow preventer box.

2.9 SLEEVES

A. Size and type as indicated on drawings.

2.10 HOSE BIBS

A. Hose bibs shall have an all-cast brass or bronze body. Hose bibs to be ¾" inside diameter and shall be installed below grade in Ametek 12" x 18" valve boxes. The cover over hose bib boxes shall be clearly marked with "non-potable water".

2.11 CONTROL VALVES

A. Provide Rainbird Electric Remote-Control Valve (size as indicated on Plan). Valve to conform to Manufacturer's Specifications concerning performance and at a given pressure.

2.12 SURGE PROTECTION

A. Provide General Electric Lightning Arrestor #GL 15 CC B 007 for controllers not equipped with primary surge protection.

B. Provide secondary surge protection installed on the 24V AC valve control wiring for systems controlling 24V AC solenoid operated valves.

C. The Irrigation Contractor is responsible for determining whether the above-mentioned surge protection equipment is provided for in controller as a "built-in" unit or if it must be supplied and installed separately.

2.13 ISOLATION VALVES

A. Provide all BALL valves for isolation purposes allowing full diameter opening when in full open Position. See Contract Drawings.

B. Manually operated valves shall be same size as mainline.

2.14 AUTOMATIC DRAIN VALVES

A. Install at low point for each lateral line "Rainbird 16AP" drain valve in gravel sump 12" x

12" in size and with a minimum of 18" of cover over sump. Miscellaneous System Components: Providerisers, reducers, couplings, adapters, fittings as necessary to complete irrigation system.

PART 3 EXECUTION

3.1 SUMMARY

A. Provide a competent superintendent and necessary assistants on the job while Work is progress. The Superintendent represents Contractor in all functions, and directives given to him by Owner are binding as if given to Contractor in person.

B. During the installation Landscape Architect may make regular site visits and reject any Work and materials which do not meet the Standards called for in Contract Documents. Rejected work must be promptly corrected and no time extension will be allowed for this reason.

3.2 INSPECTION

A. Inspect project area prior to start of Work to determine that all site conditions are acceptable for irrigation Work to begin. Inform Landscape Architect of unsuitable conditions. Do not proceed with installation of irrigation system until unsatisfactory conditions have been corrected in a manner acceptable to installer.

3.3 PREPARATION

A. Flag all existing underground utilities prior to trenching and/or boring operations. Obtain utility locations from Owner and/or General Contractor and Utilize utility locating services when necessary.

3.4 EXCAVATION

A. All excavation is unclassified and includes all materials encountered.

B. Prior to excavation, remove sod, preserve, and replace after backfilling is completed.

C. After excavation and backfilling is completed, regard trenched area consistent with surrounding area and re-establish with 100 percent pure of type grass existing. Maintain as necessary for establishment and survival of grass.

D. Backfill material to be free from rock, large stones and other unsuitable substances which could damage the pipe or create unusual settling problems. Back fill in 6” layers and tamp after each layer to prevent excessive settling.

E. Backfill trenches containing plastic pipe when pipe is cool to avoid excessive contraction in cold weather. Such backfilling can be done in early morning hours or pipe may be water cooled prior to backfilling procedures.

F. Backfill material evenly in lifts not to exceed 6” and compact to 100 percent of maximum density.

G. Contractor is responsible for establishing compaction in trenches equal to or exceeding overall compaction of paving base.

H. Minimum depth of cover of all pipe is as follows:
¾” – 1” pipe – minimum depth cover is 12”
1 ½” – 1 ½” pipe – minimum depth cover is 18”.

3.5 SLEEVING

A. Location of sleeving shown on plans is schematic. Sleeving installation shall make adjustments necessary to accommodate existing vegetation, utilities, and other existing conditions. Repair of damage to existing utilities, structures or other construction resulting from installation of sleeves is the responsibility of Contractor.

C. Install PVC sleeves according to detail.

3.6 PIPE JOINTS

A. Flow Manufacturer’s Recommendation.

B. Solvent weld PVC pipe, assemble according to Manufacturer’s Recommendations, using appropriate PVC pipe cleaner/primer and solvent cement.

C. PVC to metal connection, Work metal connection first then use Teflon pipe fitting tape on thread PVC to metal joints. Use only light wrench pressure.

D. Main line shall be installed according to Manufacturer's Recommendations.

3.7 PIPE AND FITTINGS

A. Install according to Manufacturer's Recommendations including snaking-in of PVC pipe to prevent excessive strain when contracting in cold weather. Solvent weld fittings must conform to Schedule 40 or Schedule 80 PVC dimensions and specifications for solvent weld fittings and as manufactured by Lasco, Inc.

B. Lateral lines and risers shall be as follows:

Install according to Manufacturer's Recommendations using standard techniques.

Combine lateral lines and main supply lines in common trenches wherever possible with specified minimum depth of coverage over all pipe (see Backfilling).

Install riser such that no excessive movement occurs while sprinkler head is in operation.

Height of risers to be in accordance with planned and existing plant material. Height of all risers is subject to approval of Landscape Architect. Exchange of 4" pop-up to 12" high pop-in field by Landscape Architect is incidental.

Plug lines immediately upon installation to minimize infiltration of foreign matter.

Flush lateral lines and risers prior to installation of sprinkler heads.

Above ground risers must be dark gray or black in color.

3.8 SPRINKLER HEADS

A. Low pop-up sprinkler heads shall be installed in such a manner that tip is 1" above finished grade. Where finish grade has not been established, extend a riser a minimum of 12" above existing grade to mark location of head. After finish grade is established, install heads at specified height on trip elbow swing joint, no flex pipe will be accepted.

B. High pop-up heads: High pop-up shrub heads shall have the finished height determined by Landscape Architect.

C. Backfill around sprinkler head assembly in such a manner that sprinkler head is stabilized so that no lateral motion is exhibited during operation.

D. Sprinkler Heads on Risers: Sprinkler heads on risers should be maintained on a schedule 80 PVC riser coupled by a Schedule 40 F.I.P.T. coupling (Lasco #420007) to polyethylene riser first out of lateral fitting. Height of all heads in bed areas to be

determined in the field by Landscape Architect. (Riser heights may also be achieved by use of approved pvc extensions of head manufacturer)

E. Install control wire in orderly fashion, locate in main line trench. Bundle wires together and tape at 10' intervals. Position wires under main line.

F. Allow for contraction of wires by providing looped slack at directional changes in supply line.

G. Keep wire splices to a minimum. All splices shall be waterproofed by using "Rainbird Snap-tite" wire connectors. All splice locations to be indicated on "as-built drawings".

H. Pass Wires under existing or future paving, construction, etc. through PVC sleeves provided by (Irrigation Contractor/General Contractor).

I. Control Equipment: Install automatic valves and controller according to Manufacturer's Recommendations. Appropriate locations are shown on the drawings.

J. Valve Boxes: All valves are to be housed in valve boxes. Install according to Manufacturer's recommendations and according to details. Position boxes at a height that will not cause them to interfere with maintenance machinery (e.g., mowers) and such that soil and mulch do not wash into the box. Locate all valve boxes within plant bed areas wherever possible.

K. Install surge protection equipment on primary (110 VAC) power lines. Connect each surge protect unit to at least on 5/8" diameter by 9' long copper clad grounding electrode driven into the soil to its full depth. Place electrodes no closer than 2' from controller cabinet or any control or power wire. Be consistent in locating ground rods throughout installation with respect to controller position and not locations on "As-Built" Drawings.

L. Ground wire between surge protection device and grounding electrode to be single strand bare copper wire at least one size greater than wire supplying power to control unit. Route ground wire away from power and control wires where possible.

M. When it is necessary to pass through controller cabinet wall, use two #L-70 copper grounding lugs and brass bolt as noted in detailed drawings. Use #WE 5/8" ground rod clamp (single piece and bolt) to make connection between ground rod a minimum of 10". Cover the top of rod and clamp with a Toro #850-00 cover with lid at grade level.

N. Balancing and Adjusting: Balance and adjust the various components of system so that overall operation of the system is most efficient. This includes synchronization of controllers, adjustment to pressure regulators, part circle sprinkler heads and individual station adjustments on controllers. The Contractor has the right to call in the Designer or Owner's Representative to aid in balancing and adjustment of system.

3.9 OPERATIONAL TESTING

A. Upon completion of irrigation system and after head installation, test entire system for proper operation. Flush all air from system and check components for proper operation.

3.10 "AS-BUILT" DRAWINGS

A. “As-Built” Drawings are to include locations of all wire splices, valves (automatic and manual) with triangulated measurements to each location as well as any deviations in location of piping and heads as represented by Contract Documents.

B. A set of “As-Built” Drawings are to be provided by the contractor to the Architect or Landscape Architect in order to receive written substantial completion for this scope of work.

3.11 OWNER ORIENTATION

A. Upon completion of Work and final acceptance by Owner and Landscape Architect, Contractor is responsible for orientation of maintenance personnel in the operation, maintenance, and repair of system. Furnish copies of all available parts lists, trouble shooting lists and specification sheets to Owner prior to final payment.

B. Set initial watering schedules and programming on automatic controllers at the direction of Landscape Architect. Changes in schedules and programming and instructions on how to make such changes is the responsibility of Landscape Architect.

3.12 WINTERIZING THE SYSTEM

A. If Owner requires, irrigation piping must be winterized by first blowing system clear of water using compressed air (80 psi minimum) admitted into piping at a quick coupling valve or hose bib located at a higher elevation on the system piping. Activate individual zones, higher zones first, then proceed successively through the system towards lower elevations. Proceed through all zones twice. The air compressor used to winterize system must have an engine separate from compressor tanks to prevent high temperature air from being injected directly into PVC piping.

3.13 CLEAN-UP

A. During Irrigation Work, keep project site clean and orderly. Upon completion of Work, clear grounds of debris, superfluous materials, and all equipment. Remove from site to the satisfaction of Landscape Architect and Owner.

3.14 PROTECTION

A. Protect Irrigation Work and materials from damage due to irrigation operations, operations by other contractors, trades, and trespassers. Maintain protection until Date of Substantial completion.

B. Cover all openings into system as it is being installed to prevent obstructions in pipe and breakage, misuse, or disfigurement of equipment.

C. Contractor is responsible for theft of equipment and material at job site before, during and after installation, until Date of Substantial Completion of the Work in total.

3.15 INSPECTION AND ACCEPTANCE

A. Upon completion of Work, notify Landscape Architect and Owner at least three days prior to requested Date of Inspection for Substantial Completion. Prior to contacting Landscape Architect for the purpose of demonstrating all or any part of the system, thoroughly test the system for proper operation and make adjustments and replace any defective parts prior to inspection for Substantial Completion. Where inspected irrigation Work does not comply with requirements, replace rejected Work promptly, within two weeks of inspection. In unusual circumstances, a longer time period may be granted by Owner. If such replacements are not completed within time specified, Contractor may be considered to be in default of Contract and Owner may use Contract Retainage to hire other Contractors to finish the Work.

PART 4 ACCEPTANCE AND GUARANTEE

4.1 SUMMARY

A. Substantial Completion: Submit written requests for inspection for Substantial Completion to Landscape Architect at least three calendar days prior to anticipated Date of Inspection and Testing. Substantial Completion cannot be granted and at the same time no further applications for payment shall be approved for more than 85% of contract until there has first been a walk-thru for head coverage at which time a “punch list” will be written consisting of items to be addressed and corrected by Contractor immediately. Depending on the extent of the Work on the “punch list”, the Landscape Architect will determine the job to be Substantially Complete or pending the completion of the “punch list”.

B. Submit record drawings and maintenance manuals to Landscape Architect with written request for inspection.

D. Review “punch list” Work jointly with Owner and Landscape Architect for Substantial Completion of total (contract) Work. (See “General Conditions”, Article No. 9).

E. Upon satisfactory completion of repairs and replacements and completion of “As–Built” drawings, Landscape Architect and Owner will verify system for Substantial Completion and issue AIA Certificate of Substantial Completion if all items on “punch list” have been completed. If necessary, another “punch list” will be written to itemize any deficiencies still existing and will be attached to AIA Certificate. Contractor shall complete all “punch list” items, if possible, within 30 days while continuing maintenance.

4.2 DATE OF SUBSTANTIAL COMPLETION

A. Date of Substantial Completion will constitute beginning Date of One-Year Guarantee. This Date also constitutes the beginning of the warranty responsibilities and acceptance by Owner and Landscape Architect.

4.3 GUARANTEE

A. All Work, products, equipment, and materials for one year, beginning at Date of Substantial Completion as per (AIA Certificate of Substantial Completion/written letter of notification).

B. Make good any damage, loss, destruction, or failure. Repairs and replacements shall be done promptly and at no additional cost to Owner.

C. Repair damage to grade, plants and other Work or property, as necessary.

D. If replacements are not acceptable during or at end of Guarantee Period, Owner may elect either subsequent replacement or credit. Replacement products shall have a similar one-year guarantee from time of replacement.

E. Guarantee applies to all unacceptable conditions or losses with exception of Master Irrigation Specifications

PART 5.0 METHOD OF MEASUREMENT

5.1 METHOD OF MEASUREMENT

A. The irrigation system shall be measured per these specifications and plans as a lump sum pay item.

PART 6.0 PAYMENT

6.1 PAYMENT

A. The Irrigation Pay Item shall be considered complete and shall include all material, equipment, labor, METERS, installation costs, overhead and profit. Bidder shall verify quantities by his own take-off from the Drawings and notify the Landscape Architect of discrepancies before submitting his Bid.

END OF SECTION 328400

SECTION 329300 – PLANTS, SOIL, & SOD

PART 1 GENERAL

1.1 SUMMARY

A. Extent of the planting is shown on the drawings and in the schedules.

B. Provide all labor, materials, and equipment required by or referenced from the drawings and specifications to complete the work of this section.

C. Verify plant count from plan and provide and install all plant material on plan unless site conditions prohibit.

D. All plants shall conform to or surpass minimum quality standards as defined by the American Association of Nurserymen, current edition of American Standards for Nursery Stock published by American Association of Nurserymen, Inc. and in addition shall conform to sizes and descriptions in the plant list.

E. Related work: Section 328400 – Planting Irrigation

1.2 SUBSTITUTION

A. Substitution from the specified plant list will be accepted only when satisfactory evidence in writing is submitted to the Landscape architect, showing that the plant material is not available.

B. Requests for approval of substitute plant material shall include common and botanical names and the size of substitute material.

C. Only those substitutions of at least equivalent size and having essential characteristics similar to the originally specified material will be approved. Acceptance or rejection of substitute plant material will be issued in writing by the Landscape Architect.

1.3 APPROVAL AND SELECTION OF MATERIALS AND WORK

A. The selection of all materials and the execution of all operations required under the Drawings and Specifications are subject to the approval of the Owner and Landscape Architect. They have the right to reject any and all materials and any and all work, which in their opinion, does not meet the requirements of the Contract Documents at any stage of the operations. Remove rejected Work and or materials from Project Site and replace promptly at no additional cost to the Owner.

1.4 QUALITY ASSURANCE

A. The landscape installer shall be qualified with work resulting in successful plant establishment.

B. The installer is required to maintain an experienced full-time supervisor on project site when planting is in progress.

C. Topsoil analysis shall be furnished by Mississippi State University Extension Center (Mailing Address P.O. Drawer "Z", Gulfport, MS 39502-0045) Contact Information Phone 228-865-4227, Fax: 228-868-1470 Email: harrison@ext.msstate.edu (or an equal), stating percentages of organic matter; gradation of sand, silt, and clay content; caution exchange capacity; (sodium absorption ration;) deleterious material; pH; and mineral and plant-nutrient content of topsoil.

D. A report of suitability of topsoil shall be furnished for lawn growth stating the recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory topsoil.

E. The following codes and standards shall be observed:

1. State and Federal laws, including for disease and insect control.

2. Requirements of authorities having jurisdiction.

F. A Pre-installation Conference shall be conducted 30 days prior to construction. The General contractor shall schedule this meeting to include the landscape contractor, irrigation contractor, Landscape Architect, and any other parties participating in this contract.

1.5 WORKMANSHIP

A. Install all plant materials neatly.

B. Make minor adjustments to layout as may be required and requested by Landscape Architect at no additional cost to the Owner.

C. Coordinate delivery of all plant material with time of installation to prevent any plant material from being stockpiled on site longer than 24 hours.

D. Deliver materials in such manner as to not damage or decrease the health and vigor of the plant materials. Store materials away from detrimental elements. Coordinate with General Contractor to secure a safe staging area.

E. Handle, load, unload, and transport materials carefully to avoid damage.

F. Maintain and protect plant materials as necessary to insure health and vigor.

1.6 GUARANTEE

A. Guarantee all plant materials and lawn areas for one year from the date of substantial completion. Contractor shall replace plants that fail to grow properly with plants as originally specified at the earliest practical date following plant failure, without additional charges to the Owner.

B. Replacement materials will be guaranteed for one year from the date of replacement.

C. The Contractor shall not be responsible for replacing plants which are damaged by abuse or improper maintenance by Owner as reported by Contractor outlined below or by acts of nature occurring after acceptance.

D. Acts of nature may include but may not be limited to high winds of hurricane or tornado force, sleet, hail, freezing rain and extreme cold (as determined by the Landscape Architect). Contractor agrees to replace losses due to Acts of Nature at twenty percent (20%) less than the original contract price for the damaged work.

1.7 CONTRACTOR'S PERIODIC INSPECTION

A. During guarantee period, Contractor shall make periodic inspections of the project to satisfy him that maintenance by the Owner is adequate.

B. Any methods or products which he deems not normal or detrimental to good plant growth shall be reported to the Owner in writing.

C. Failure to inspect and report shall be interpreted as approval and the Contractor shall be held responsible for any and all replacements.

1.8 SOIL TESTING

A. Contractor shall have soil tested by suitable laboratory chosen by the Contractor and subject to written approval of the Landscape Architect.

B. Soil test shall be completed in all planting areas to determine lime and fertilizer requirements. Submit test results to Landscape Architect for approval. Contractor shall adjust pH and fertility based upon results. No addition to or placement of soil is to be done prior to initial soil test report approval.

PART 2 PRODUCTS

2.1 TOPSOIL

A. Topsoil shall be fertile, friable, sandy loam and a natural surface soil obtained from well areas reviewed by Landscape Architect and possessing characteristics of representative soils in the project vicinity that produce heavy growths of crops, grass, or other vegetation.

B. Topsoil shall be free of subsoil, brush, organic litter, or objectionable weeds, clay, clots, stumps, stones, roots, or other material harmful to plant growths or hindrance to planting or maintenance operations. Should regenerative materials be present in the soil, Contractor shall eradicate and remove such growth, both surface and root, which may appear in the imported material within one year following acceptance of the work.

C. Topsoil shall not be handled in a frozen muddy condition. The acidity range shall be between 5.0 and 7.0 inclusive. The mechanical analysis of the soil shall be as follows:

Sieve Size	Percent Passing
1 inch mesh	99 - 100 percent
1/4-inch mesh	97 - 99 percent
No. 100 mesh	40 - 60 percent
No. 200 mesh	20 - 40 percent

D. Topsoil, regardless of the source, shall meet all requirements of the paragraph above.

E. Stockpile material that does not meet the requirements may, at the option of the contractor, be improved by screening and the addition of organic matter and chemical admixtures.

2.2 PLANTING SOIL MIXTURE

A. Provide soil mix amended as per laboratory recommendations. Some more specific descriptions may be given on the drawings for special planting of trees. Basic planting soil mix consists of:

40% topsoil (as described Above)
60% organic planting mix (submit sample for approval)

B. The components shall be thoroughly mixed to uniform consistency by hand or machine methods.

2.6 TREES

A. All large deciduous shade trees and ornamental trees are to be field grown from rooted cuttings true to variety and not grafted material. No grafted material will be accepted for the initial installation or as guarantee replacement material.

B. Orders for Plant Materials - Submit to Landscape Architect within 30 days from date contract is awarded to the Contractor.

C. Contractor will submit confirmed orders within ten days of tagging. Contractor is responsible for payment of deposits.

2.7 ORDERS FOR PLANT MATERIALS

A. Submit to Landscape Architect within 30 days from date of contract is awarded to General contractor confirmed orders for material from approved growers (listed on plant schedule). Contractor is responsible for payment of deposits required by approved growers.

2.8 FERTILIZER

A. Fertilizer for all trees, plants and ground covers shall be Milorganite delivered to the site in unopened containers.

B. Fertilize all areas according to the manufacturer's recommended rates in accordance with the monthly maintenance guideline herein.

C. Cultivate and water beds or pits thoroughly after application.

D. Adjust fertilizer in accordance with interim soil test reports.

2.9 FERTILIZER FOR SOD

A. Fertilizer for sod shall be Milorganite fertilizer as per manufacturer’s recommended rates.

B. Fertilizer shall be uniform in composition, dry and free flowing, and shall be delivered to the site in the original, unopened container, bearing the Manufacturer's guaranteed analysis. Fertilizer shall not have been exposed to weather prior to delivery to the site. After delivery until used, it shall be completely protected at all times. It shall not be stored in direct contact with the ground.

2.10 PLANTS

A. All plants shall conform to or surpass minimum quality standards as defined by the American Association of Nurserymen (AAN), current edition of American Standard for Nursery Stock, published by the AAN, Inc. and in addition, shall conform to sizes and descriptions in the plant list.

2.11 CERTIFICATES OF INSPECTION FOR PLANT MATERIAL

A. All necessary inspection certificates shall be supplied to the Landscape Architect's representative for each shipment of plant material, as required by law. Certificates showing source of origin shall be filed with Landscape Architect prior to acceptance of the material.

2.12 INSPECTION

A. All plant materials shall be subject to inspection and approval. The Landscape Architect reserves the right to reject any and all plants which fail to meet this specification at any point during the installation of the job. All rejected materials shall be promptly removed from the site by the Contractor at no additional cost to the owner.

2.13 QUALITY AND SIZE

A. All plant materials furnished shall be well branched, proportioned width to height, of normal habit, sound, healthy and vigorous in growth. The minimum acceptable sizes of plants shall be measured before pruning with branches in normal position and shall

conform to measurements specified. Plants used where symmetry is required shall be matched as closely as possible. Plants shall meet all requirements as listed in the plant list.

2.14 SOURCE OF PLANTS

A. Plants shall be field nursery, container grown or collected material subject to the requirements of the Specifications.

2.15 FIELD TAGGED PLANTS

A. All trees are to be located and tagged by the Contractor. The Landscape Architect retains the right to refuse all plant material that does not meet the specifications identified on the drawing.

2.16 INSECTS, PESTS AND PLANT DISEASES

A. All plants shall be of healthy stock, free from disease, insects, eggs, larvae, and parasites of an objectionable or damaging nature.

2.17 SUBSTITUTIONS

A. Substitution from the specified list will be accepted only when satisfactory evidence in writing is submitted to the Landscape Architect, showing that the plant specified is not available. Requests for approval of substitute material shall include common and botanical names and size of plant material. Only those substitutions of at least equivalent size and having the essential characteristics similar to the originally specified material will be approved. The Landscape Architect will issue acceptance or rejection of substitute plant material in writing.

B. Balled and burlapped plant materials are to be wrapped with organic wrapping burlap only. Synthetic material will not be accepted. Remove all nursery loading straps once plant material is placed in the pit.

C. Stakes for supporting trees shall be sound timber, straight, sized as shown in planting details and of sufficient length to adequately support the plant. All visible surfaces shall be painted flat black.

D. Deadmen or stakes for anchoring guy wires in the ground shall be of size, material, and strength adequate to hold guy taut and maintain tree firmly in an upright position (see plan sections).

E. Wire shall be as shown on plans applicable sections for guying.

2.18 MULCH

A. The approved mulch shall be clean, fresh, free of noxious weed, seed, fire ants, Japanese beetles and/or fringed beetles. On slopes pine straw mulch shall be used.

2.19 EROSION-CONTROL MATERIALS (PLANTING SLOPES GREATER THAN 3:1)

A. Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended 6" steel wire staples.

B. Fiber Mesh: Biodegradable twisted jute or spun-coir mesh, 0.92 lb/sq yd minimum, with 50 to 65% open area. Include manufacturer's recommended 6" steel wire staples.

2.20 SOD

A. Sod shall be 100% specified grass, free of weeds, freshly dug.

2.21 LIME

A. Ground dolomitic limestone not less than 85% total carbonates and magnesium, ground so that 50% passes 100-mesh sieve and 90% 20-mesh sieve.

PART 3 EXECUTION

3.1 LAYOUT OF MAJOR PLANTS

A. Before commencing planting operations, location of major plants and outlines of areas to be planted shall be marked out on the ground, by the Contractor for approval by the Landscape Architect. Contact the Landscape Architect a minimum of 48 hours in advance of the anticipated review of the layout.

3.2 TIME AND PLANTING

A. Planting operations shall be during favorable weather in which conditions are neither extremely cold or hot nor to the point that the risk of loss is too great. The Contractor shall inform the Landscape Architect of high risks due to weather.

3.3 PREPARATION OF PLANTING BEDS (See Planting Sections)

A. Any planting bed that has an existing tree in it shall not be tilled. Each hole is to be hand dug. No major roots are to be harmed during the planting. If the tree is harmed, the Contractor will be held responsible.

B. Grade will be brought to the level of the finished grade by the Contractor. This is to include debris removal and any grading required to bring the landscaping finished grade to the proper level for planting trees, shrubs, and ground covers. Contractor shall grade for proper drainage.

C. Circular plant pits with vertical sides shall be dug by hand or machine methods for planting and transplanting of trees and shrubs.

D. Shrub pit diameter shall be a minimum of one foot greater than the spread of the root mass.

E. All transplanted material is to be replanted the same day it is dug or properly healed in and watered regularly to insure life.

F. Test excavated plant pits to determine if sufficient drainage is present for proper plant survival.

G. Fill the area between the pits, if the individual pits are arranged in a group, to the required grade with pine bark mulch 3" deep. Plant beds shall be neatly edged and kept free of weeds until the work is accepted.

3.4 EXCAVATION FOR PLANTING GROUND COVERS

A. Ground cover beds shall be scarified by hand or machine method to a minimum depth of 18". Four inches of pine bark additive and 20 pounds per 1000 square feet of Trident Rootzone Humus (or approved equal organic fertilizer) shall be uniformly incorporated into the soil to the full 18" of minimum depth.

3.5 DRAINAGE TEST FOR TREES

A. Tree pits shall be filled with water. If percolation is less than 100% within a period of twelve hours, drill an 8" auger to a depth of 2' below the bottom of the pit. Retest the pit. In case drainage is still unsatisfactory, notify the Landscape Architect in writing of the condition before planting the trees. Contractor is fully responsible for the warranty of the trees. If the tree is on a slope, provide a trench filled with stone and a 4" drainpipe to the point of nearest relief.

B. Drainage Test for Plants and Ground Covers shall be spot tested to insure proper percolation.

C. Balled and container plants shall be placed firmly upon scarified subgrade and backfilled with planting soil mixture. Remove all wire, cords, and burlap from the top of root ball. Hand tamp carefully around and under ball to fill all voids. Water during back filling. Form saucer from planting soil mixture in order to retain water.

D. Gently loosen outer roots of container grown plants to encourage outward growth.

E. Fertilizer shall be thoroughly mixed and soaked into the top 2" of soil for all plant pits.

3.6 TREE TRANSPORTATION

A. The Contractor shall be responsible not only for the safe transportation of the plants to the site but also their condition upon arrival. Trees with abrasions of the bark, sun scalds, fresh cuts, or breaks of limbs which have not completely callused will be rejected. Trees

which have been damaged during transit will be replaced by the Contractor at no additional cost. All plant unit costs will reflect all above listed specifications.

3.7 TREE TAGS

A. All plants accepted at the nursery by the Landscape Architect shall be tagged with serialized self-locking tags. Trees delivered to the site without these tags or with broken tags will be rejected. The tags shall remain on the trees until the Contractor has been given instructions by the Landscape Architect for removal.

3.8 PRUNING DECIDUOUS TREES

A. Deciduous trees and shrubs shall be pruned only to thin out heavy growth.

B. Do not top or remove terminal growing point or leader of any plant.

3.9 TREE STAKING

A. Stake or support trees as illustrated and described in the planting details on the drawings.

3.10 PREPARATION OF LAWN AREAS

A. Grade will be brought to a level of 4" below finished grade by the General Contractor. The landscape contractor will spread 2-3" of topsoil, fine grading all lawn areas to finish grade. All areas shall have smooth and continual grade between the existing and fixed controls such as walks and curbs. Roll, scarify, rake and level as necessary to obtain true, even, and firm lawn surfaces. All finished grades shall meet approval of the Project Engineer before sodden or seeding operations begin.

3.11 AREAS TO RECEIVE SOD

A. Grade will be brought to the level of the finished grade by the Landscape Contractor. The Landscape Contractor will be responsible for fine grading. This is to include debris removal and any grading required to bring the finished topsoil grade to the proper level for laying sod. Contractor shall fine grade as necessary for uniformity and drainage.

C. On this grade spread specified fertilizer as per Manufacturer's recommendations and lime at a rate of 50 lbs. per 1000 square feet evenly over all areas to receive grass. A soil test shall be made prior to the beginning of fertilizing and liming, and the quantities of the lime and fertilizer shall be adjusted, if necessary, to achieve a pH of 6.0 to 7.0.

D. Scarify prepared grade to depth of 6 inches, thoroughly incorporating fertilizer and lime into the top 6" of existing soil in all areas to be grassed. Caution shall be exercised to avoid damage to underground utilities. All building debris, vegetation, sticks and stones over 1 inch in any dimension shall be removed and the surface leveled and smoothed.

3.12 SODDING OPERATIONS

A. Delivery of sod shall be scheduled so as to allow laying of sod without delay. No sod shall remain stacked longer than 24 hours. In the event that sod cannot be laid immediately upon delivery, Contractor shall lay sod on as designated site, to be approved by the Landscape Architect. No sod shall overlap, and it shall be lightly watered as necessary to keep moist.

B. Lay sod when bed is not excessively wet or frozen, but when soil is moist for a depth of 4".

C. Lay sod so that no voids occur. Sod shall be tamped and rolled by hand methods. The completed surface shall be true to finish grade and even and firm at all points.

D. Do not move heavy objects over areas to be sodded after the soil has been prepared.

E. A satisfactory stand is defined as a cover of living grass of specified species, after true leaves are formed in which no gaps larger than five (5) inches square occur.

F. Areas determined by the Landscape Architect to be solid rock will be exempt from this requirement.

3.13 REMOVAL OF EXISTING GRASS

A. The Contractor is to remove existing grass and weeds from all areas for planting and resodding as designated on the plans. The existing stands are to be removed to a maximum depth of 1" so as to not disturb existing tree roots where present in those areas.

B. Aerate with a tined tiller to break up the upper 3" lightly not to damage tree roots. Pick up solids for discarding and cut cleanly any roots damaged.

C. Spread a light layer of topsoil not more than 1" in depth over the aerated area and fine grade to meet acceptance by the Landscape Architect. Apply fertilizer and lime to these areas as specified previously under "Areas to receive Sod" or "Preparation of Planting Beds" which ever the case may be.

PART 4 CLEANUP AND PROTECTION

4.1 SUMMARY

A. Keep Project Site clean and orderly during planting operations.

B. Clear grounds of debris, superfluous materials, and all equipment upon completion of Work. Remove from site to the satisfaction of the Landscape Architect and Owner.

C. Protect all work and materials from damage due to landscape operations and operations by other contractors, trades, and trespassers. Maintain protection until Date of Substantial Completion.

D. Contractor is responsible for theft of equipment and material at the site before, during and after installation, until Date of Substantial Completion of Work in total.

PART 5 LANDSCAPE MAINTENANCE

5.1 SUMMARY

A. Begin maintenance at commencement of Work of this Section and Continue until Substantial Completion and for thirty days after Substantial Completion of the project is issued, as part of Work of this section.

B. Provide labor, materials, equipment and means for proper maintenance of all materials on this project.

C. Contractor shall follow with maintenance methods described in these specifications.

5.2 SUPERVISION

A. Contractor shall provide quality workmanship with qualified landscape professionals to conduct the work in a manor that is satisfactory to the client.

B. The contractor shall have one point of contact for the client or client’s representative to be able to reach out to if there is an issue that needs to be addressed.

5.3 MAINTENANCE OF TREES, SHRUBS, SOD, AND SEED

A. Maintain all plants in a growing, well formed, healthy condition by watering, fertilizing, pruning, weeding, spraying, wrapping, straightening, replacement or by other necessary maintenance operations.

5.4 WATERING

A. Monitor owner's automatic watering system and schedule for proper watering of all plant material.

B. Advise Landscape Architect immediately in writing of recommended alterations due to weather or other conditions.

C. Water landscaped (and sodded) areas not covered by automatic watering system as frequently as necessary to maintain proper moisture level, using the following schedule as a guide:

1. Twice a month during March, April, May

2. Once a week during June, July, August, September
3. Seasonally adjust for Fall and Winter Months

5.5 FERTILIZING

A. Apply four (3) times a year to trees, shrubs, ground cover, and sod as per manufacturer's recommended application rate.

5.6 MOWING

A. Mow grass to a height of 2 to 2.5" when it reaches a height of 3", or as directed by Landscape Architect. Seeded and sodded lawns shall have at least one mowing before receiving Substantial Completion.

5.7 RESODDING

A. Rework and re-sod areas which fail to show a uniform stand of grass. Perform work with the same kind of sod applied and repeated until all areas are covered with a uniform stand of grass.

5.8 RESEEDING

A. Rework and seed areas which fail to show a uniform stand of grass. Perform work with the same kind of seed applied and repeated until all areas are covered with a uniform stand of grass.

5.9 SITE ANNUAL PLANTING

A. Replace annual plantings according to schedule in Drawings. Blooming plants shall be replaced as necessary throughout specified Maintenance Period to maintain blooming condition.

5.10 PRUNING

A. Remove dead wood as it becomes evident. Remove living portions of plants only at the direction of Landscape Architect.

5.11 WILT-PROOFING

A. Apply approved anti-desiccant to all evergreen trees during last two weeks in October (except pines).

5.12 SPRAYING

A. For each spraying combine approved insecticide and fungicide to provide maximum protection for all plant materials. Three sprays annually; in March, May, and August.

5.13 WEEDING

A. Two applications (Spring and Fall) of chemical pre-emergent spray, approved. Two applications (during growing season) of chemical contact spray (Round-Up, by Monsanto, or approved equal). Every other week manually weed (by hand) during the time period reflected on the maintenance schedule (ref. plans); remove all visible weeds.

5.14 MULCHING

A. Keep planting areas neat and uniformly mulched to specified depth on a continuous basis. In addition to replacing and re spreading mulch as necessitated during the maintenance period completely replenish mulch in all planting areas one time.

5.15 STRAIGHTENING

A. Maintain plants in their stable upright position and at the proper grade by straightening and tightening staking and guying apparatus and as approved by the Landscape Architect.

5.16 CLEAN-UP

A. Keep all planting areas neat, weeded and uniformly mulched on a continuous basis. Clean up adjacent walks and pavement where lettered as a result of maintenance operations, on a continuous basis.

PART 6 ACCEPTANCE AND GUARANTEE

6.1 SUBSTANTIAL COMPLETION

A. Submit written requests for inspection for Substantial Completion to the Landscape Architect at least three calendar days prior to anticipated date of inspection and testing.

B. Substantial Completion cannot be granted and at the same time no further applications for payment shall be for more than 85% of the Contract until there has been a walk - thru for planting at which time a "punch list" will be written consisting of items to be addressed and corrected by the Contractor immediately. Depending on the extent of work on the "punch list", the Landscape Architect will determine the job to be "substantially complete" or pending the completion of the "punch list".

C. Submit Record Drawings and Maintenance manuals to the Landscape Architect with written request for inspection.

D. Review the "punch list" work jointly with the Owner and Landscape Architect for Substantial Completion of the total (contract) work.

E. Upon completion of repairs and replacements found necessary at the time of review, the Owner and Landscape Architect will confirm the date of Substantial Completion and

issue the written notice of Substantial Completion if all items on the punch list have been completed. If necessary, another punch list will be written to itemize any deficiencies still existing and will be attached to the written notice of substantial completion. The contractor shall complete all "punch list" items within 30 days while continuing maintenance.

F. The date of Substantial Completion will constitute the beginning date of the One - Year Guarantee. This date also constitutes the beginning of warranty responsibilities and acceptance by the Owner and Landscape Architect.

6.2 GUARANTEE

A. All work, products, equipment, and materials for one year, beginning at the Date of Substantial Completion as per the written notice of Substantial Completion.

B. Make good any damage, loss, destruction, or failure. Repairs and replacements shall be done promptly and at no additional cost to the Owner.

C. Repair damage to grade, plants, and other work, as necessary.

D. If the replacement is not acceptable during or at the end of the Guarantee Period, the Owner may elect either subsequent replacement or credit. Replacement products shall have a similar one-year guarantee from the time of replacement.

E. Guarantee applies to all unacceptable conditions or losses with exception of those due to acts of nature, vandalism, or Owner neglect, as determined by Landscape Architect. Act of Nature includes, but may not be limited to, high winds of hurricane or tornado force, sleet, hail, freezing rain and extreme cold (as determined by Landscape Architect). Contractor agrees to replace losses due to Acts of Nature at (*20%*) less than original contract price for the damaged Work.

PART 7 METHOD OF MEASUREMENT

7.1 METHOD OF MEASUREMENT

A. Plant material shall comply with these specifications and the plans in which each plant is listed and will be measured by the number of units of each kind of plant and size specified.

B. Sod shall comply with these specifications and quantified by the plans. The units of sod shall be measured in square yards.

PART 8 PAYMENT

8.1 PAYMENT

A. All of the landscape work described in these specifications and drawings shall be bid as lump sum. However, a schedule of values with unit cots for soil, bed prep, mulch, plant material, and sod shall be submitted as an attachment to the Landscape Contractor's bid.

B. Bidder shall verify quantities by his own take-off from the Drawings and notify the Landscape Architect of discrepancies before submitting his Bid.

C. Topsoil, Soil Amendments, Staking & Guying, Tree Wrapping, Mulching, and Watering during the maintenance period shall be considered a subsidiary obligation of the plant material installation and included in the bid.

END OF SECTION 329300

SECTION 33 11 00
WATER UTILITY DISTRIBUTION PIPING

PART 1 - GENERAL

SCOPE

The work under this section shall consist of providing all work, materials, labor, equipment, and supervision necessary to provide water distribution system components and other work, as required in these specifications, on the drawings and as otherwise deemed necessary to complete the work. The limits of the work, including the responsible party for testing purposes, shall be clearly defined on the Drawings. Included are the following topics:

PART 1 - GENERAL
- Scope
- Related Work
- Reference Documents
- Reference Standards
- Submittals
- Continuity of Existing Water Distribution System
- Provisions for Future Work
- As-Built Drawings

PART 2 – MATERIALS
- General

PART 3 - EXECUTION
- General

RELATED WORK

Applicable provisions of Division 1govern work under this section.

Related work specified elsewhere:
Section 02 32 00 – Geo Technical Investigation
Section 22 11 00 – Facility Water Distribution
Section 22 13 00 – Facility Sanitary Sewerage
Section 22 14 00 – Facility Storm Drainage
Section 30 05 00 – Common Work Results for All Exterior Work
Section 31 23 16.13 – Trenching
Section 31 25 00 – Erosion Control

REFERENCE DOCUMENTS

The Mobile Area Water and Sewer System (MAWSS) Standard Specifications, Section 11 (Potable Water Utilities) shall govern the work.

REFERENCE STANDARDS

American Society for Testing and Materials (ASTM):

B88	Standard Specifications for Seamless Copper Water Tube
F477	Standard Specifications for Elastomeric Gaskets for Joining Plastic Pipe
D3139	Standard Specifications for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals

D3350	Standard Specifications for Polyethylene Plastic Pipe and Fittings Materials

American Water Works Association (AWWA):

C502	Dry Barrel Fire Hydrants
C504	Rubber-Seated Butterfly Valves
C509	Resilient-Seated Gate Valves for Water Supply Service
C515	Reduced Wall, Resilient Seated Gate Valves for Water Supply Service
C550	Protective Epoxy Interior Coatings for Valves and Hydrants
C800	Underground Service Line Valves and Fittings
C900	Polyvinyl Chloride (PVC) Pressure Pipe, and Fabricated Fittings for Water Distribution (4”-12”)
C905	Polyvinyl Chloride (PVC) Pressure Pipe, and Fabricated Fittings for Water Distribution (14”-48”)
C906	Polyethylene Pressure Pipe, and Fabricated Fittings for Water Distribution (4”-63”)
C104/ANSI A21.4	Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
C105/ANSI A21.5	Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems
C111/ANSI A21.11	Standard for Rubber-Gasket Joints for Ductile Iron Pressure Pipe and Fittings
C151/ANSI A21.51	Standard for Ductile Iron Pipe, Centrifugally Cast
C153/ANSI A21.53	Standard for Ductile Iron Compact Fittings

SUBMITTALS

Provide manufacturers product information (cut sheets) and O&M information for watermain materials including:

- Pipe
- Fittings
- Valves
- Hydrants
- Joint Restraint Materials

Provide copies of all pressure and electric continuity testing procedures and results for the project to the OWNER’S Project Representative and the AE within 48 hours of completing the individual tests.

Provide reports that document safe sample collection procedures and results.

CONTINUITY OF EXISTING WATER DISTRIBUTION SYSTEM

Provide a construction schedule to OWNER’S Project Representative, municipal water utility (if applicable) and local fire department (if applicable) for review and approval prior to starting construction. Schedule shall indicate the date and time of all required water supply interruptions.

Do not interrupt existing water supply without approval from OWNER’S Project Representative, municipal water utility, and local fire department.

Once approved, notify all distribution system users impacted by outages a minimum of 48 hours in advance of outage. Notification shall be provided in writing and describe the nature and duration of outages, and provide the name and number of Contractor’s foreman or other contact.

PROVISIONS FOR FUTURE WORK

N/A

AS-BUILT DRAWINGS

Show the actual locations of watermain and services, valves and hydrants on drawings and show changes to proposed watermain size, alignment, or grades. Show the actual locations, sizes and types of underground utilities and other features encountered during construction.

PART 2 - MATERIALS

GENERAL

The Mobile Area Water and Sewer System Standard Specifications, Section 11 (Potable Water Utilities) shall govern the materials required in this work.

PART 3 - EXECUTION

GENERAL

The Mobile Area Water and Sewer System Standard Specifications, Section 11 (Potable Water Utilities) shall govern the execution of this work.

END OF SECTION

SECTION 33 30 00
SANITARY SEWERAGE UTILITIES

PART 1 - GENERAL

SCOPE

The work under this section shall consist of providing all work, materials, labor, equipment, and supervision necessary to provide for the sanitary sewer work required in these specifications and on the drawings. The limits of the work, including the responsible party for testing purposes, shall be clearly defined on the Drawings. Included are the following topics:

PART 1 - GENERAL
- Scope
- Related Work
- Reference Documents
- Reference Standards
- Submittals
- Provisions for Future Work
- As-Built Drawings

PART 2 - MATERIALS
- General

PART 3 - EXECUTION
- General
- Diverting Sewage

RELATED WORK

Applicable provisions of Division 1 govern work under this section.

Related work specified elsewhere:
Section 02 32 00 – Geo Technical Investigation
Section 22 11 00 – Facility Water Distribution
Section 22 13 00 – Facility Sanitary Sewerage
Section 22 14 00 – Facility Storm Drainage
Section 30 05 00 – Common Work Results for All Exterior Work
Section 31 23 16.13 – Trenching
Section 31 25 00 – Erosion Control

REFERENCE DOCUMENTS

The Mobile Area Water and Sewer System (MAWSS) Standard Specifications, Section 12 (Sanitary Sewers) shall govern the work.

REFERENCE STANDARDS

American Society for Testing and Materials (ASTM) International:

C425	Standard Specification for Compression Joints for Vitrified Clay Pipe and Fittings

C700	Standard Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated
D1784	Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
D2235	Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings
D2564	Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems
D2680	Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) and Poly(Vinyl Chloride) (PVC) Composite Sewer Piping
D3034	Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
D3212	Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
D3350	Standard Specification for Polyethylene Plastics Pipe and Fittings Materials
D4673	Standard Classification System for Acrylonitrile-Butadiene-Styrene (ABS) Plastics and Alloys Molding and Extrusion Materials
F477	Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
F679	Standard Specification for Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings

American Water Works Association (AWWA):

C104/ANSI A21.4	Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings
C151/ANSI A21.53	Standard for Ductile Iron Pipe, Centrifugally Cast
C153/A21.53	Standard for Ductile Iron Compact Fittings

SUBMITTALS

Provide manufacturer's product information (cut sheets), shop drawings and O&M information for sewer materials including:

- Pipe
- Fittings
- Pre-Cast and Cast-in-Place Structures
- Castings and Covers

Provide reports documenting all required testing and televising. testing results for the project to the DFD Project Representative and the AE within 48 hours of completing the individual tests.

PROVISIONS FOR FUTURE WORK

N/A

AS-BUILT DRAWINGS

Show the actual locations of sanitary sewer pipes and service lines, manholes and cleanouts on drawings. Show changes to proposed sanitary sewer pipe, alignment, or grades. Show the actual locations, sizes and types of underground utilities and other features encountered during construction.

PART 2 - MATERIALS

GENERAL

Material Requirements for this work are governed by MAWSS Standard Specifications, Section 12.

PART 3 - EXECUTION

GENERAL

Execution of this work is governed by MAWSS Standard Specifications, Section 12.

END OF SECTION

SECTION 33 40 00
STORM DRAINAGE UTILITIES

PART 1 - GENERAL

SCOPE

The work under this section shall consist of providing all work, materials, labor, equipment, and supervision necessary to provide for the storm drainage work required in these specifications and on the drawings. The limits of the work, including the responsible party for testing purposes, shall be clearly defined on the Drawings. Included are the following topics:

PART 1 - GENERAL
- Scope
- Related Work
- Reference Documents
- Reference Standards
- Submittals
- Provisions for Future Work
- As-Built Drawings

PART 2 - MATERIALS
- Excavation and Backfill
- Reinforced Concrete Pipe
- Manhole and Junction Box Structures
- Inlets and Catch Basins
- Headwalls

PART 3 - EXECUTION
- Excavation and Backfill
- Reinforced Concrete Pipe
- Manhole and Junction Box Structures
- Inlets and Catch Basins
- Headwalls

RELATED WORK

Applicable provisions of Division 1 govern work under this section.

Related work specified elsewhere:
Section 02 32 00 – Geo Technical Investigation
Section 22 11 00 – Facility Water Distribution
Section 22 13 00 – Facility Sanitary Sewerage
Section 22 14 00 – Facility Storm Drainage
Section 30 05 00 – Common Work Results for All Exterior Work
Section 31 23 16.13 – Trenching
Section 31 25 00 – Erosion Control

REFERENCE DOCUMENTS

Alabama Department of Transportation (ALDOT) 2022 Standard Specifications, Section 214 (Structure Excavation and Backfill for Drainage and Minor Structures

Alabama Department of Transportation (ALDOT) 2022 Standard Specifications, Section 533 (Storm Sewers)

Alabama Department of Transportation (ALDOT) 2022 Standard Specifications, Section 619 (Pipe Culvert End Treatments)

Alabama Department of Transportation (ALDOT) 2022 Standard Specifications, Section 621 (Inlets, Junction Boxes, Manholes, and Miscellaneous Drainage Structures)

REFERENCE STANDARDS

American Society for Testing and Materials (ASTM):

C76	Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
C443	Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets

SUBMITTALS

Provide manufacturer's product information (cut sheets), shop drawings and O&M information for storm drainage materials including:

- Pipe
- Fittings
- Pre-Cast and Cast-in-Place Structures
- Reinforcing steel for cast-in-place structures
- Concrete strength testing (28-day break) for cast-in-place structures
- Castings

Provide reports documenting all required testing and televising.

PROVISIONS FOR FUTURE WORK

N/A

AS-BUILT DRAWINGS

Show the actual locations of storm drainage facilities and service lines and structures on drawings. Show changes to proposed storm drainage facilities, alignment, or grades. Show the actual locations, sizes and types of underground utilities and other features encountered during construction.

PART 2 - MATERIALS

EXCAVATION AND BACKFILL

Alabama Department of Transportation (ALDOT) 2022 Standard Specifications, Section 214 (Structure Excavation and Backfill for Drainage and Minor Structures) will govern the materials required for this work.

REINFORCED CONCRETE PIPE

Alabama Department of Transportation (ALDOT) 2022 Standard Specifications, Section 533 (Storm Sewers)

will govern the materials required for this work.

MANHOLE AND JUNCTION BOX STRUCTURES

Alabama Department of Transportation (ALDOT) 2022 Standard Specifications, Section 621 (Inlets, Junction Boxes, Manholes, and Miscellaneous Drainage Structures) will govern the materials required for this work.

INLETS & CATCH BASINS

Alabama Department of Transportation (ALDOT) 2022 Standard Specifications, Section 621 (Inlets, Junction Boxes, Manholes, and Miscellaneous Drainage Structures) will govern the materials required for this work.

HEADWALLS

Alabama Department of Transportation (ALDOT) 2022 Standard Specifications, Section 619 (Pipe Culvert End Treatments) will govern the materials required for this work.

PART 3 - EXECUTION

EXCAVATION AND BACKFILL

Alabama Department of Transportation (ALDOT) 2022 Standard Specifications, Section 214 (Structure Excavation and Backfill for Drainage and Minor Structures) will govern the execution of this work.

REINFORCED CONCRETE PIPE

Alabama Department of Transportation (ALDOT) 2022 Standard Specifications, Section 533 (Storm Sewers) will govern the execution of this work.

MANHOLE AND JUNCTION BOX STRUCTURES

Alabama Department of Transportation (ALDOT) 2022 Standard Specifications, Section 621 (Inlets, Junction Boxes, Manholes, and Miscellaneous Drainage Structures) will govern the execution of this work.

INLETS & CATCH BASINS

Alabama Department of Transportation (ALDOT) 2022 Standard Specifications, Section 621 (Inlets, Junction Boxes, Manholes, and Miscellaneous Drainage Structures) will govern the execution of this work.

HEADWALLS

Alabama Department of Transportation (ALDOT) 2022 Standard Specifications, Section 619 (Pipe Culvert End Treatments) will govern the execution of this work.

END OF SECTION

APPENDIX A

COMMISSIONED ARTWORK

1- Contractor shall coordinate with the Architect ,City of Mobile and freelancing artist to design, fabricate and install metal tree like sculptures on the north porch bay and a glazed pottery and metal sculpture in the fountain on the South side entry porch. (See Drawings for locations)

A: Tree sculpture to be made of 304L stainless steel with textured welds- All welded construction. Trees are to be mounted to the concrete

Slab of the northside porch. Tree like sculptures are to extend from the slab and have at least one branch connection to the ceiling Structure directly above the tree base. Trees should be designed as a pair within each bay where they visually respond to one another Without touching or being fastened to each other. Trees can be fastened to the brick column in one place for horizontal stability if needed.

Tree sculptures are to be fabricated by an artist of technical expertise with metal work and welding. Present a body of work that must include similar Metal sculptures. Artist must be 18 years of age or older and must reside within Alabama.

Refer to allowance section on the bid form for amount.

B. Water Feature near the south side main entrance to have an approximately 24” wide vessel shape for water to be held and trickle down into

The basin with recirculating pump. Water flow should be equally visible from all sides. The vessel should be made of metal and or glazed stoneware, durable enough to withstand outdoor elements. See sheet A102 for basin cross section.

Water Feature Vessel, is to be fabricated by an artist of technical expertise with clay and or metal. Present a body of work that must include similar Clay and Metal work . Artist must be 18 years of age or older and must reside within Alabama.

Refer to allowance section on the bid form for amount.

APPENDIX A

IT AND SECURITY SYSTEMS

1- Contractor shall coordinate with the Architect and City of Mobile (COM) IT representative and a system installer to install a turnkey facility and site network and WiFi system.
The network system shall:
A: Include a free guest and password protected employee network.
B: Extend a minimum of 150' from the facility.
C: Be compatible with all COM systems, including proposed fire alarm system, intrusion detection, and security camera systems located on site.
D: Be installed by a system installer with a minimum of 5 years experience in installing similar systems.
E: System and components (where applicable) shall be National Defense Authorization Act (NDAA) Compliant and shall include (but not be limited to) devices listed in this appendix.
F: Shall include a UPS system with a 90 minute capacity.

2- The contractor shall coordinate with the Architect and Fire Protection Engineer to install an integrated intrusion detection system for the facility to include motion detection and door sensors.
The intrusion Detection System shall:
A: Be a cloud managed system capable of remote control and monitoring.
B: Monitor all doors into the building, including support spaces, but excluding exterior restrooms.
C: Be able to operate access control systems such as magnetic locks or future keypads.
D: Detect motion from inside the Lobby, Offices, Theater, Break Room, and Conference room.

3- The Contractor shall coordinate with the Architect, COM IT Representative, COM Police and certified installer to design and install a camera system throughout the site and inside the facility.
The Camera System shall:
A: Be connected to a DVR with 1 month capacity.
B: Be cloud based with remote monitoring and (if applicable) control.
C: Cover the entrance to the site, parking lot, terraces, lawn, facility access, interior public spaces (excluding restrooms and offices), and exterior breezeways.
D: Be National Defense Authorization Act (NDAA) Compliant and compatible with existing COM camera monitoring systems.

4- All devices for the systems listed above shall be invoiced to the IT and Security Allowance included in the Bid. Infrastructure required for the systems above that is not shown on the drawings shall also be invoiced to the IT and Security Allowance.
A: Prior to any design or installation, designer and installer certifications must be approved by the COM and Architect.

B: All Invoices shall include an itemized list of material and labor.

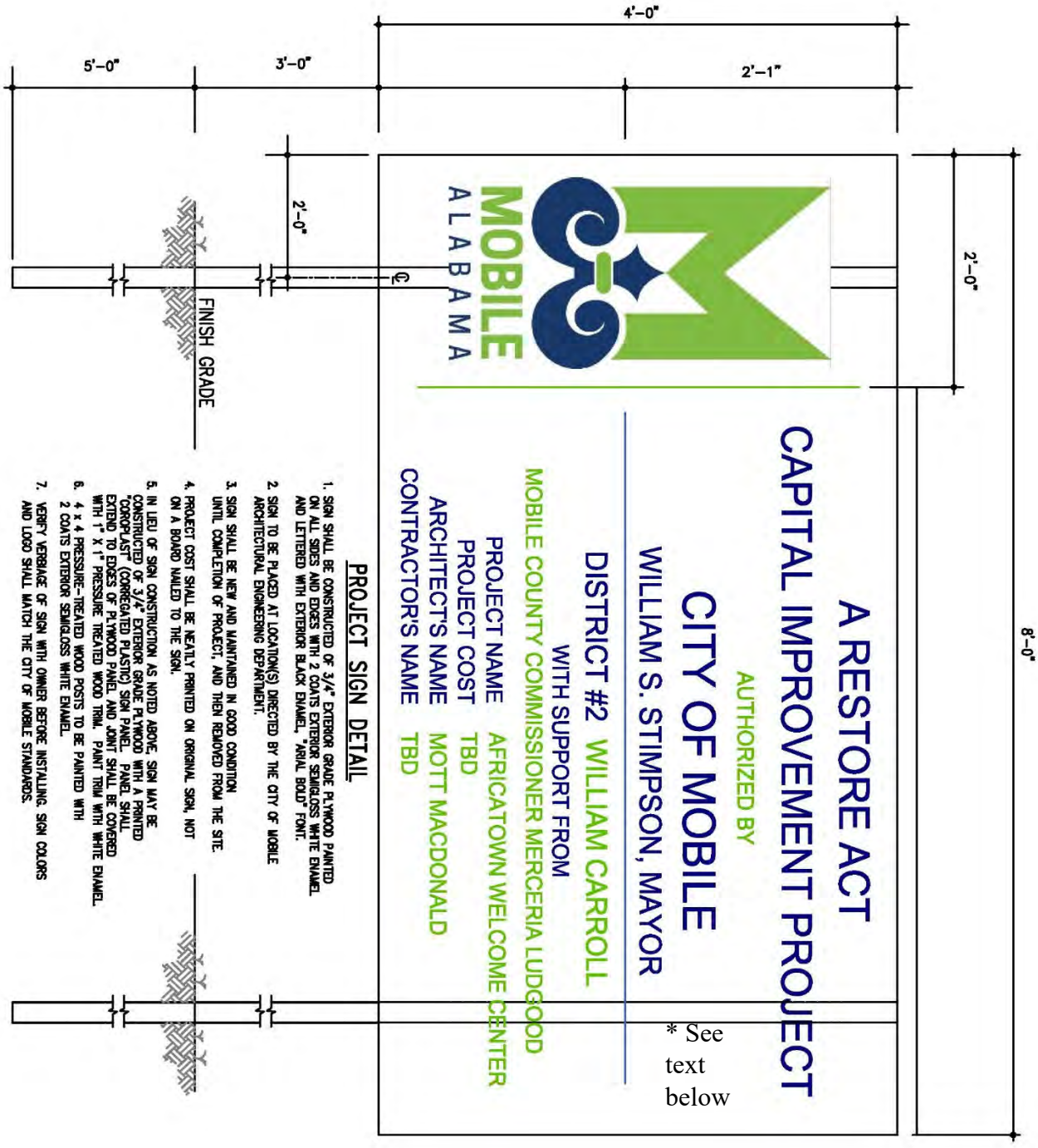
Item	Description	Manufacturer	Model # (s)	Vendor
Building Access Control	Cloud Managed Access Control System	Lenel (Preferred)		
Fire and Security Alarms		Lenel (Preferred)		
Security Cameras (Interior)	This is a generic model # actual camera model TBD by others depending upon the interior enviroment.	Axis or Avycon both are NDAA compliant	Axis Model # M4216-LV Avycon Model # AVC-VNN81AVLT/V2	ADI Global Supply and Electronic CDW
Security Cameras (Exterior)	This is a generic model # actual camera model TBD by others depending upon the exterior enviroment.	Axis or Avycon both are NDAA compliant	Axis Model # P3267-LVE Avycon Model # AVC-VHN41FLT/2.8	ADI Global Supply and Electronic CDW
CCTV DVR	National Defense Authorization Act (NDAA) Compliant	NDAA Compliant		
Wifi AP (Interior)	HPE Aruba AP-515	Aruba	Q9H63A	CDW- 5364138
Wifi AP (Interior)	HPE Aruba AP-MNT-B - network device mounting kit	Aruba	R3J16A	CDW - 5617107
Wifi AP (Interior)	HPE Aruba Central Foundation - subscription license (3 years) - 1 access point	Aruba	Q9Y59AAE	CDW - 6483096
Wifi AP (Exterior)	Outside WIFI AP 460S12C - Wide (120°) band for use on edge of environment	Extreme Networks	AP460S12C-FCC	CDW # 5971518
Wifi AP (Exterior)	AP 460S12C Software and TAC Support	Extreme Networks	97000-AP460S12C-FCC	CDW # 6047595
Wifi AP (Exterior)	Outside WIFI AP 460S6C - Narrow (60°) band for use on edge of environment	Extreme Networks	AP460S6C-FCC	CDW # 5961293
Wifi AP (Exterior)	AP 460S6C Software and TAC Support	Extreme Networks	97000-AP460S6C-FCC	CDW # 6047602
Wifi AP (Exterior)	Outside WIFI AP 460C - Omnidirection for use in center of environment	Extreme Networks	AP460C-FCC	CDW # 5844964
Wifi AP (Exterior)	AP 460C Software and TAC Support	Extreme Networks	97000-AP460C-FCC-3YR	CDW - 6634108
Network Switches	Aruba (JL724A) 6200F 24G 4Sfp+ Layer3. These are the models the	Aruba	6200F 24G	Aruba - JL724A

	IT users, and IT will determine the appropriate choice based on the connections and interior environment.			
Network Switches	Aruba (R8Q67A) 6200M 24G 4Sfp+ Layer3. These are the models the IT users, and IT will determine the appropriate choice based on the connections and interior environment.	Aruba	6200M 24G	Aruba - R8Q67A
Network Switches	Aruba (JL727A) 6200F 48G 4Sfp+ Layer3. These are the models the IT users, and IT will determine the appropriate choice based on the connections and interior environment.	Aruba	6200F 48G	Aruba - JL727A
Network Switches	Aruba (R8Q69A) 6200M 48G 4Sfp+ Layer3. These are the models the IT users, and IT will determine the appropriate choice based on the connections and interior environment.	Aruba	6200M 48G	Aruba - R8Q69A
Network Switches	Aruba (R8S90A) 6300M 48G Layer3. These are the models the IT users, and IT will determine the appropriate choice based on the connections and interior environment.	Aruba	6300M 48G	Aruba - R8S90A
Network Switches	Aruba (JL258A) 2930F 8G Layer3. These are the models the IT users, and IT will determine the appropriate choice based on the connections and interior environment.	Aruba	2930F 8G	Aruba - JL258A
Network Switches	Aruba 6000 Series 12/24/48G Layer2. These are the models the IT users, and IT will determine the appropriate choice based on the connections and interior environment.	Aruba	6000 Series 12/24/48G	Aruba - R8N89A#ABA/ R8N87A#ABA/R8N85A#ABA
Network Switches	Aruba (J9850A) – 5406R Zl2. These are the models the IT users, and IT will determine the appropriate choice based on the connections and interior environment.	Aruba	5406R Zl2	Aruba - J9850A

APPENDIX C

JOBSITE SIGNAGE

1- Contractor shall Include in their bid, a jobsite sign meeting the following standards:



* "This project was funded by a grant from the U.S. Department of the Treasury and the Alabama Department of Conservation and Natural Resources under the RESTORE Act Direct Component Program"



Required Attachments for RESTORE Direct Component (Bucket 1) Construction Contracts

Non-State and State Agency – Template version 12.27.2023

The "Required Attachments for RESTORE Direct Component Construction Contracts" is not intended to represent all requirements and obligations that may be applicable to contracts resulting from this solicitation. Any contract resulting from this solicitation will be subject to the terms and conditions of the Sub-Award Agreement between the Alabama Department of Conservation and Natural Resources ("ADCNR") and the Project Owner, the terms and conditions of the Federal Award from the U. S. Department of Treasury, including any Special Award Conditions, the ADCNR Sub-Award Terms and Conditions, the RESTORE Act Financial Assistance Standard Terms and Condition and Program-Specific Terms and Conditions under the "Direct Component," as amended, the RESTORE Act, 33 USC § 1321(t) et seq., the U.S. Department of Treasury Regulations governing the RESTORE Act, 31 CFR § 34 et seq., all applicable terms and conditions in 2 CFR Part 200 of the Office of Management and Budget ("OMB") Uniform Guidance for Grants and Cooperative Agreements, as amended on August 13, 2020, including Appendix II to 2 CFR Part 200, and all other OMB circulars, executive orders or other federal laws or regulations applicable to the services provided under this contract. All of these terms and conditions apply to the Subrecipient and its Contractors, as well as any covered subcontractors or vendors whose work is funded as a result of this solicitation.

IT IS THE PRIME CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THESE TERMS AND CONDITIONS ARE INCORPORATED INTO EACH SUBCONTRACT WHOSE WORK IS FUNDED AS A RESULT OF THIS SOLICITATION.

Requirements applicable to any contract and/or subcontract issued as a result of this solicitation include, but are not limited to:

- CERTIFICATIONS RELATED TO RESTORE ACT DIRECT COMPONENT FUNDING
- RESTORE ACT FINANCIAL ASSISTANCE STANDARD TERMS AND CONDITIONS AND PROGRAM-SPECIFIC TERMS AND CONDITIONS
- ADCNR SUBAWARD GRANT AGREEMENT
- APPENDIX II TO 2 CFR PART 200: CONTRACT PROVISIONS FOR NON-FEDERAL ENTITY CONTRACTS UNDER FEDERAL AWARDS
- PROCUREMENT OF RECOVERED MATERIALS
- PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OF EQUIPMENT
- DOMESTIC PREFERENCES FOR PROCUREMENTS
- CONTRACTING WITH SMALL AND MINORITY BUSINESSES, WOMEN'S BUSINESS ENTERPRISES, AND LABOR SURPLUS AREA FIRMS
- SAMPLE LETTER FROM CONTRACTOR TO MBE/WBE FIRMS

- 41 CFR §60-1.4(b) EQUAL OPPORTUNITY CLAUSE *(for Federally Assisted Construction Contracts)*

- 41 CFR §60-4.2(d) NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (Executive Order 11246)

- 41 CFR §60-4.3(a) STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (Executive Order 11246)

- SUBCONTRACTOR LISTING FORM *(The Lowest Responsive and Responsible Bidder MUST submit with required MBE/WBE documentation.)*

- FORM SF-LLL *(The Lowest Responsive and Responsible Bidder MUST submit this form prior to Award; the Prime Contractor will be required to submit this form for each subcontract exceeding $100,000 upon subcontract execution.)*

CERTIFICATIONS RELATED TO RESTORE ACT DIRECT COMPONENT FUNDING

By submitting a bid for this contract, bidders expressly acknowledge that:

1) This project is funded in whole or in part with grant funding from the Department of Treasury and the Alabama Department of Conservation and Natural Resources under the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act of 2012 (RESTORE Act);

2) Any contract resulting from this bid (including subcontracts) will be subject to the terms and conditions of said funding award, the RESTORE Act Financial Assistance Standard Terms and Conditions and Program-Specific Terms and Conditions, the ADCNR Sub-Award Terms and Conditions, the RESTORE Act, 33 USC 1321(t), Treasury Regulations 31 CFR § 34 et seq., including 31 CFR §§ 34, Subpart D, all applicable terms and conditions in 2 CFR Part 200 (including Appendix II to Part 200), and all other OMB circulars, executive orders or other federal laws or regulations, as applicable.;

3) Any contract awarded (including subcontracts) will be subject to 31 CFR Part 19 – Governmentwide Debarment and Suspension (Nonprocurement); and,

4) Any contract awarded (including subcontracts) is subject to Treasury Title VI regulations, 31 CFR Part 22, for the implementation of Title VI of the Civil Rights Act of 1964, as amended (42 USC 2000d, et seq.).

5) Any contract awarded (including subcontracts) will be subject to the laws and regulations of the United States and the State of Alabama.

The owner will not enter into a contract with a bidder, or the bidder's principals, if the bidder or its principals appear on the federal government's Excluded Parties List. Bidders hereby certify, by submission of a proposal, that neither it nor its principals are presently debarred, suspended, proposed for disbarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

Bidders must verify that any subcontractor (or the subcontractor's principals) does not appear on the federal government's Excluded Parties List prior to executing a subcontract with that entity. The Excluded Parties List is accessible at http://www.sam.gov.

Bidders must register with SAM.gov AND obtain and activate a Unique Entity Identifier (UEI) prior to submitting a bid for this project. Each subcontractor will also be required to register with SAM.gov AND obtain and activate a UEI prior to beginning work on the project. Sam.gov registration must be maintained throughout the project period of performance.

The bidder must include a term or condition in all lower-tier covered transactions (i.e., subcontracts) that the transaction is subject to 31 CFR Part 19 - Governmentwide Debarment and Suspension (Nonprocurement).

RESTORE ACT

FINANCIAL ASSISTANCE STANDARD TERMS AND CONDITIONS AND PROGRAM-SPECIFIC TERMS AND CONDITIONS

RESTORE ACT

FINANCIAL ASSISTANCE STANDARD TERMS AND CONDITIONS AND PROGRAM-SPECIFIC TERMS AND CONDITIONS

U.S. Department of the Treasury

December 2018

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RESTORE ACT FINANCIAL ASSISTANCE STANDARD TERMS AND CONDITIONS AND PROGRAM-SPECIFIC TERMS AND CONDITIONS

PREFACE

The grant agreement is comprised of the following documents:

1. A Notice of Award from the Department of the Treasury (“Treasury”);

2. The RESTORE Act Financial Assistance Standard Terms and Conditions (“Standard Terms and Conditions”);

3. The RESTORE Act Financial Assistance Program-Specific Terms and Conditions (“Program- Specific Terms and Conditions”);

4. The approved application, including all documents, certifications, and assurances that are part of the approved application;

5. The approved scope of work;

6. The approved budget; and,

7. Any special terms and conditions applied by Treasury to the award (“Special Award Conditions”).

The recipient must comply, and require each of its subrecipients, contractors, and subcontractors employed in the completion of the activity, project, or program to comply with all federal statutes, federal regulations, executive orders (EOs), Office of Management and Budget (OMB) circulars, Standard Terms and Conditions, Program-Specific Terms and Conditions, and any Special Award Conditions of this federal financial assistance award (“Award”), as applicable, in addition to the certifications and assurances required at the time of application. This Award is subject to the laws and regulations of the United States.

Any inconsistency or conflict in Standard Terms and Conditions, Program-Specific Terms and Conditions, and any Special Award Conditions of this Award will be resolved according to the following order of precedence: federal laws, federal regulations, applicable notices published in the Federal Register, EOs, OMB circulars, Treasury’s Standard Terms and Conditions, Program-Specific Terms and Conditions, and any Special Award Conditions. Special Award Conditions may amend or take precedence over Standard Terms and Conditions and Program-Specific Terms and Conditions.

Some of these Standard Terms and Conditions contain, by reference or substance, a summary of pertinent federal statutes, federal regulations published in the Federal Register (Fed. Reg.) or Code of Federal Regulations (C.F.R.), EOs, or OMB circulars. In particular, these Standard Terms and Conditions incorporate many of the provisions contained in OMB's Uniform Guidance for Grants and Cooperative Agreements (2 C.F.R. Part 200), which supersedes former OMB Circular A-102 (the former grants management common rule), OMB Circular A-133 (single audit requirements), and all former OMB circulars containing the cost principles for grants and cooperative agreements. To the extent that it is a summary, such a provision is not in derogation of, or an amendment to, any such statute, regulation, EO, or OMB circular. Unless a definition is provided here, definitions can be found in the RESTORE Act (Public Law No. 112-141 (July 6, 2012)), Treasury's RESTORE Act regulations (79 Fed. Reg. 48039

(Aug. 15, 2014) and 79 Fed. Reg. 61236 (Oct. 10, 2014), codified at 31 C.F.R. Part 34)), and/or 2 C.F.R.

Part 200.

A PROGRAM-SPECIFIC TERMS AND CONDITIONS - AWARDS UNDER THE DIRECT COMPONENT

In addition to all the Standard Terms and Conditions described in Sections C through V of this document, all Treasury RESTORE Act awards made under the Direct Component include the following Program-Specific Terms and Conditions in this Section A:

1. Administrative Costs

a. Administrative costs are defined at 31 C.F.R. § 34.2.

b. Under no circumstances may the recipient use more than three percent of the Award funds received for administrative costs. Administrative costs do not include indirect costs that are identified specifically with, or readily assignable to facilities, as defined in 2 C.F.R. § 200.414. Costs borne by subrecipients do not count toward the three percent cap.

c. Up to 100 percent of program income may be used to pay for allowable administrative costs, subject to the three percent cap.

2. Oil Spill Liability Trust Fund

The recipient must not seek any compensation for the approved program or project from the Oil Spill Liability Trust Fund. If the recipient is authorized to make subawards, the recipient must not use Direct Component funds to make subawards to fund activities for which any claim for compensation was filed and paid out by the Oil Spill Liability Trust Fund after July 6, 2012.

3. Remedies for Noncompliance

a. If Treasury determines that the recipient has expended Direct Component funds to cover the cost of any ineligible activities, in addition to the remedies available in Section M of these Standard Terms and Conditions, per 31 C.F.R. § 34.804, Treasury will make no additional payments to the recipient from the Gulf Coast Restoration Trust Fund (Trust Fund), including no payments from the Trust Fund for activities, projects, or programs until the recipient has either (1) deposited an amount equal to the amount expended for the ineligible activities in the Trust Fund, or (2) Treasury has authorized the recipient to expend an equal amount from the recipient's own funds for an activity that meets the requirements of the RESTORE Act.

b. If Treasury determines the recipient has materially violated the terms of this Award, Treasury will make no additional funds available to the recipient from any part of the Trust Fund until the recipient corrects the violation.

B PROGRAM-SPECIFIC TERMS AND CONDITIONS - AWARDS UNDER THE CENTERS OF EXCELLENCE RESEARCH GRANTS PROGRAM

In addition to all the Standard Terms and Conditions described in Sections C through V of this document, all Treasury RESTORE Act awards under the Centers of Excellence Research Grants Program include the following Program-Specific Terms and Conditions in this Section B:

1. Allowable Costs

In addition to the prohibitions contained in 2 C.F.R. Part 200, Subpart E (*Cost Principles*), the following costs are unallowable unless approved in writing by Treasury:

a. Construction, including the alteration, repair, or rehabilitation of existing structures. Facilities costs are allowable as indirect costs in a federally approved negotiated indirect cost rate.

b. Acquisition of land or interests in land.

2. Notifications

a. If the selection of a Center or Centers of Excellence occurs after the start date of this Award, the recipient must promptly inform Treasury of the following:

i. Name of the Center of Excellence and the entity selected to administer it, including the names of member organizations if the entity is a consortium;

ii. The DUNS Number of the entity;

iii. Location of the entity;

iv. Discipline or disciplines assigned to the Center of Excellence;

v. Description of the actual public input process undertaken, including a summary of any comments received and a description of how they were addressed; and

vi. The estimated budget for the Center, including the total allocation of funded dollars for the Center.

b. The recipient must immediately notify Treasury if it anticipates selecting a new entity or consortium to serve as a Center of Excellence, or making other changes to the initial selection of Center(s) of Excellence described in the scope of work.

3. Performance Reports

In addition to the reporting requirements in Section D, the recipient must submit an annual report to the Gulf Coast Ecosystem Restoration Council (“Council”), in a form prescribed by the Council that includes information on subrecipients, subaward amounts, disciplines addressed, and any other information required by the Council. When the subrecipient is a consortium, the annual report must also identify the

consortium members. The recipient must provide a copy of this report to Treasury when it submits the report to the Council.

STANDARD TERMS AND CONDITIONS

AWARDS UNDER THE DIRECT COMPONENT AND THE CENTERS OF EXCELLENCE RESEARCH GRANTS PROGRAM

C FINANCIAL REQUIREMENTS

1. **Applicable Regulations**

This Award is subject to the following federal regulations and requirements. This list is not exclusive:

a. Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, 2 C.F.R. Part 200, Subparts A through F, and any Treasury regulations incorporating these requirements.

b. Treasury's RESTORE Act regulations, 31 C.F.R. Part 34.

c. Governmentwide Debarment and Suspension, 31 C.F.R. Part 19.

d. Governmentwide Requirements for Drug-Free Workplace, 31 C.F.R. Part 20.

e. New Restrictions on Lobbying, 31 C.F.R. Part 21.

f. Reporting Subaward and Executive Compensation Information, 2 C.F.R. Part 170.

g. Award Term related to Trafficking in Persons, 2 C.F.R. Part 175.

2. Scope of Work

The recipient must only use funds obligated and disbursed under this Award for the purpose of carrying out activities described in the attached approved scope of work. The recipient must not incur or pay any expenses under this Award for activities not related to the attached approved scope of work unless Treasury first approves an Award amendment explicitly modifying the approved scope of work to include those activities.

3. Period of Performance; Pre-award Costs

The recipient must use funds obligated and disbursed under this Award only during the period of performance specified in the Notice of Award, which is the time period during which the recipient may incur new obligations and costs to carry out the work authorized under this Award. The only exception is for costs incurred prior to the effective date of this Award, which are allowable only if:

a. Treasury specifically authorized these costs in writing on or after the issuance date of this Award;

b. Incurring these costs was necessary for the efficient and timely performance of the scope of work; and

c. These costs would have been allowable if incurred after the date of the award.

4. Indirect Costs

a. The recipient may only charge indirect costs to this Award if these costs are allowable under 2 C.F.R. Part 200, subpart E (*Cost Principles*).

b. Indirect costs charged must be consistent with an accepted de minimis rate or the indirect cost rate agreement negotiated between the recipient and its cognizant agency (defined as the federal agency that is responsible for reviewing, negotiating, and approving cost allocation plans or indirect cost proposals, see 2 C.F.R. § 200.19) and must be included in the recipient's budget.

c. Unallowable direct costs are not recoverable as indirect costs.

d. The maximum dollar amount of allocable indirect costs charged to this Award shall be the lesser of:

i. The line item amount for the indirect costs contained in the approved budget, including all budget revisions approved in writing by the Treasury; or,

ii. The total indirect costs allocable to this Award based on the indirect cost rate approved by a cognizant or oversight federal agency and applicable to the period in which the cost was incurred, provided that the rate is approved on or before the Award end date.

5. Cost Sharing and Budget Limitations

a. The recipient is not required to contribute any matching funds.

b. The recipient shall not request or receive additional funding beyond what was included in the approved application for the attached approved scope of work from any federal or non-federal source without first notifying Treasury.

6. Program Income

Any program income (defined at 2 C.F.R. § 200.80) generated by the recipient or the subrecipient during the period of performance of the award or subrecipient agreement, as applicable, must be included in the approved budget and be used for the purposes of the Award and under the conditions of these Standard Terms and Conditions and any Special Award Conditions, i.e. solely to accomplish the approved scope of work.

7. Incurring Costs or Obligating Federal Funds Beyond the Expiration Date

The recipient must not incur costs or obligate funds under this Award for any purpose pertaining to the operation of the activity, project, or program beyond the end of the period of performance. The only costs which are authorized for a period up to 90 days following the end of the period of performance are those strictly associated with close-out activities. Close-out activities are normally limited to the preparation of final progress, financial, and required audit reports unless otherwise approved in writing by Treasury.

Under extraordinary circumstances, and at Treasury's sole discretion, Treasury may approve the recipient's request for an extension of the 90-day closeout period.

8. Tax Refunds

Refunds of taxes paid under the Federal Insurance Contributions Act (FICA) and the Federal Unemployment Tax Act (FUTA) that are received by the recipient during or after the period of performance must be refunded or credited to Treasury if these taxes were paid out of RESTORE Act funds in accordance with 2 C.F.R. Part 200, subpart E (*Cost Principles*). The recipient agrees to contact Treasury immediately upon receipt of these refunds.

9. Subawards

a. If the recipient is permitted to make subawards under this award, the recipient must execute a legally binding written agreement with the subrecipient which includes a budget by federal object class categories or fixed amount (2 CFR 200.332) if approved by Treasury. This agreement must incorporate all the terms and conditions of this Award, including any Special Award Conditions, and must include the information at 2 C.F.R. § 200.331. The recipient must perform all responsibilities required of a pass-through entity, as specified in 2 C.F.R. Part 200.

b. The recipient must evaluate and document each subrecipient's risk of noncompliance with federal statutes, federal regulations, and the terms and conditions of the subaward for purposes of determining the appropriate subrecipient monitoring strategy, as described in 2 C.F.R. § 200.331(b).

c. The recipient must monitor the subrecipient's use of federal funds through reporting, site visits, regular contact, or other means to provide reasonable assurance that the subrecipient is administering the subaward in compliance with the RESTORE Act, Treasury's RESTORE Act regulations, these Standard Terms and Conditions, Program-Specific Terms and Conditions, and any Special Award Conditions, and to ensure that performance goals are achieved.

d. The recipient must provide training and technical assistance to the subrecipient as necessary.

e. The recipient must, if necessary, take appropriate enforcement actions against non-compliant subrecipients.

f. If lower tier subawards are authorized by Treasury, the recipient must ensure that a subrecipient who makes a subaward applies the terms and conditions of this Award, including any Special Award Conditions, to all lower tier subawards through a legally binding written agreement, and that a subrecipient who makes a subaward carries out all the responsibilities of a pass-through entity described at 2 C.F.R. Part 200.

g. The recipient must maintain written standards of conduct governing the performance of its employees involved in executing this Award and administration of subawards.

i. No employee, officer, or agent shall participate in the selection, award, or administration of a subaward supported by federal funds if a real or apparent conflict of interest would be involved. Such a conflict would arise when the employee, officer, or agent, any member of his or her immediate family, his or her partner, or an organization in which he/she serves as an officer or which employs or is about to employ any of the parties mentioned in this section, has a financial interest or other interest in the organization selected or to be selected for a subaward.

ii. The officers, employees, and agents of the recipient shall neither solicit nor accept anything of monetary value from subrecipients.

iii. A recipient may set standards for situations in which the financial interest is not substantial or the gift is an unsolicited item of nominal value. A financial interest may include employment, stock ownership, a creditor or debtor relationship, or prospective employment with the organization selected or to be selected for a subaward.

iv. The standards of conduct must provide for disciplinary actions to be applied for violations of such standards by officers, employees, or agents of the recipient.

D RECIPIENT REPORTING AND AUDIT REQUIREMENTS

1. **Financial Reports**

a. The recipient must submit a "Federal Financial Report" (SF-425) on a semi- annual basis for the periods ending March 31 and September 30 (or June 30 and December 31, if instructed by Treasury), or any portion thereof, unless otherwise specified in a special award condition. Reports are due no later than 30 days following the end of each reporting period. A final SF-425 must be submitted within 90 days after the end of the period of performance.

b. In the remarks section of each SF-425 submitted, the recipient must describe by federal budget class category the use of all funds received by the recipient and subrecipient (if applicable).

c. The report must be signed by an authorized certifying official who is the employee authorized by the recipient organization to submit financial data on its behalf.

d. The recipient must submit all financial reports via http://www.GrantSolutions.gov, unless otherwise specified by Treasury in writing.

2. Performance Reports

a. The recipient must submit an SF-PPR ("Performance Progress Report"), a "RESTORE Act Status of Performance Report," (standard format provided by Treasury, OMB Approval No. 1505-0250) and an updated "RESTORE Act Milestones Report," (standard format provided by Treasury, OMB Approval No. 1505-0250) on a semi-annual basis for the periods ending March 31 and September 30 (or June 30 and December 31, if instructed by Treasury), or any portion thereof, unless otherwise specified in a Special Award Condition. Reports are due no later than 30 days following the end of each reporting period, except the final report, which is due 90 days following the end of the period of performance.

b. The recipient must submit all performance reports in (a) above, via http://www.GrantSolutions.gov, unless otherwise specified in writing by Treasury, and the recipient must complete these reports according to the following instructions:

i. SF-PPR: In the "performance narrative" attachment (section B of the SF- PPR), the recipient must provide the following information:

a) In Section B-1:

1) Summarize activities undertaken during the reporting period by the recipient and any subrecipients (if applicable);

2) Summarize any key accomplishments, including milestones completed for the reporting period;

3) List any contracts awarded during the reporting period, along with the name of the contractor and its principal, the DUNS number of the contractor, the value of the contract, the date of award, a brief description of the services to be provided, and whether or not local preference was used in the selection of the contractor; and

4) If the recipient or any subrecipient is authorized to make subawards, list any subawards executed during the reporting period, along with the name of the entity and its principal, the DUNS number of the entity, the value of the agreement, the date of award, and a brief description of the scope of work.

b) In Section B-2:

1) Indicate if any operational, legal, regulatory, budgetary, and/or ecological risks, and/or any public controversies, have materialized. If so, indicate what mitigation strategies have been undertaken to attenuate these risks or controversies; and

2) Summarize any challenges that have impeded the recipient's ability to accomplish the approved scope of work on schedule and on budget. If the scope of work is not on schedule, the recipient should propose a revised schedule and update its milestone report.

c) In Section B-3:

Summarize any significant findings or events, including any data compiled, collected, or created, if applicable.

d) In Section B-4:

Describe any activities to disseminate or publicize results of the activity, project, or program, including data and its repository and citations for publications resulting from this Award.

e) In Section B-5:

1) Describe all efforts taken to monitor contractor and/or subrecipient performance, including site visits, during the reporting period.

2) For subawards, indicate whether the subrecipient(s) submitted an audit to the recipient, and if so, whether the recipient issued a management decision on any findings; and

3) For awards where Davis-Bacon Act provisions are applicable, indicate whether the recipient and/or subrecipient(s) received and reviewed certified weekly payroll records and/or whether the recipient or subrecipient(s) conducted labor interviews.

4) Describe any other activities or relevant information not already provided.

f) In Section B-6:

Summarize the activities planned for the next reporting period.

ii. "RESTORE Act Status of Performance Report": Instructions are provided on the report form.

iii. "RESTORE Act Milestones Report": Instructions are provided on the report form.

3. Interim Reporting on Significant Developments per 2 C.F. R. § 200.328(d)

a. Events may occur between the scheduled performance reporting dates that have significant impact upon the activity, project, or program. In such cases, the recipient must inform Treasury as soon as the following types of conditions become known:

i. Problems, delays, or adverse conditions which will materially impair the ability to meet the objective of this Award. This disclosure must include a statement of the action taken, or contemplated, and any assistance needed to resolve the situation.

ii. Favorable developments, which enable meeting time schedules and objectives sooner or at less cost than anticipated or producing more or different beneficial results than originally planned.

b. The recipient must:

i. Promptly provide to Treasury and the Treasury Inspector General a copy of all state or local inspector general reports, audit reports other than those prepared under the Single Audit Act, and reports of any other oversight body, if such report pertains to an award under any RESTORE Act component, including the Comprehensive Plan Component and Spill Impact Component.

ii. Immediately notify Treasury and the Treasury Inspector General of any indication of fraud, waste, abuse, or potentially criminal activity pertaining to grant funds.

iii. Promptly notify Treasury upon the selection of a contractor or subrecipient performing work under this Award, and include the name and DUNS number for the subrecipient or contractor, and the total amount of the contract or subaward.

4. Audit Requirements

The recipient is responsible for complying, and ensuring all subrecipients comply, with all audit requirements of the Single Audit Act and 2 C.F.R. Part 200 Subpart F – Audit Requirements.

5. Operational Self-Assessment

The recipient must submit a revised *Operational Self-Assessment* form no later than June 30th of each calendar year for the duration of this Award. Only one *Operational Self- Assessment* must be submitted per recipient per year. In completing the form, the recipient must note controls or activities that have changed from its previous submission. The recipient must submit the *Operational Self-Assessment* electronically to restoreact@treasury.gov, unless otherwise specified in writing by Treasury. The form may be downloaded at Direct Component OSA or Centers of Excellence OSA .

E FINANCIAL MANAGEMENT SYSTEM AND INTERNAL CONTROL REQUIREMENTS

1. Recipients that are states must expend and account for Award funds in accordance with the applicable state laws and procedures for expending and accounting for the state's own funds. All other recipients must expend and account for Award funds in accordance with federal laws and procedures. In addition, all recipients' financial management systems must be sufficient to:

a. Permit the preparation of accurate, current, and complete SF-425, SF-PPR, RESTORE Act Milestones Report, and RESTORE Act Status of Performance Reports, as well as reporting on subawards, if applicable, and any additional reports required by any Special Award Conditions;

b. Permit the tracing of funds to a level of expenditures adequate to establish that such funds have been used in accordance with all applicable federal, state, and local requirements, including the RESTORE Act, Treasury RESTORE Act regulations, these Standard Terms and Conditions, Program-Specific Terms and Conditions, and any Special Award Conditions.

c. Allow for the comparison of actual expenditures with the amount budgeted for each Award made to the recipient by Treasury under the RESTORE Act.

d. Identify and track all RESTORE Act awards received and expended by the assigned grant number, which is the Universal Award ID (as provided by Treasury), the year the Award was made, the awarding agency (Treasury), and the program's CFDA title and CFDA number (21.015).

e. Record the source and application of funds for all activities funded by this Award, as well as all awards, authorizations, obligations, unobligated balances, assets, expenditures, program income, and interest earned on federal advances, and allow users to tie these records to source documentation such as cancelled checks, paid bills, payroll and attendance records, contract and subaward agreements, etc.

f. Ensure effective control over, and accountability for, all federal funds, and all property and assets acquired with federal funds. The recipient must adequately safeguard all assets and ensure that they are used solely for authorized purposes.

2. The recipient must establish written procedures to implement the requirements set forth in section H below (Award Disbursement), as well as written procedures to determine the allowability of costs in accordance with 2 C.F.R. Part 200, subpart E (*Cost Principles*) and the terms and conditions of this Award.

3. The recipient must establish and maintain effective internal controls over this Award in a manner that provides reasonable assurance that the recipient is managing this Award in compliance with the RESTORE Act, Treasury's RESTORE Act regulations, these Standard Terms and Conditions, Program-Specific Terms and Conditions, and any Special Award Conditions. These internal controls should be in compliance with guidance in "Standards for Internal Control in the Federal Government" issued by the Comptroller General of the United States or the "Internal Control Integrated Framework", issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The recipient must evaluate and monitor its compliance, and the compliance of any subrecipients, with the RESTORE Act, Treasury's RESTORE Act regulations, these Standard Terms and Conditions, Program-Specific Terms and Conditions, and any Special Award Conditions, and promptly remedy any identified instances of noncompliance. When and if an instance of noncompliance cannot be remedied by the recipient, the recipient must promptly report the instance of noncompliance to Treasury and the Treasury Inspector General, followed by submitting a proposed mitigation plan to Treasury.

4. The recipient must take reasonable measures to safeguard protected personally identifiable information (PII) consistent with applicable federal, state, and local laws regarding privacy and obligations of confidentiality.

F RECORDS RETENTION REQUIREMENTS

1. The recipient must retain all records pertinent to this Award for a period of three years, beginning on a date as described in 2 C.F.R. § 200.333. While electronic storage of records (backed up as appropriate) is preferable, the recipient has the option to store records in hardcopy (paper) format. For the purposes of this section, the term "records" includes but is not limited to:

a. Copies of all contracts and all documents related to a contract, including the Request for Proposal (RFP), all proposals/bids received, all meeting minutes or other documentation of the evaluation and selection of contractors, any disclosed conflicts of interest regarding a contract, all signed conflict of interest forms, all conflict of interest and other procurement rules governing a particular contract, and any bid protests;

b. Copies of all subawards and all documents related to a subaward. For competitively selected subawards, documents may include those relevant to and required by the recipient's or subrecipient's selection process such as the funding opportunity announcement or equivalent, all applications received, all meeting minutes or other documentation of the evaluation and selection of subrecipients, any disclosed conflicts of interest regarding a subaward, and all signed conflict of interest forms;

c. All documentation of site visits, reports, audits, and other monitoring of contractors (vendors) and subrecipients;

d. All financial and accounting records, including records of disbursements to contractors (vendors) and subrecipients, and documentation of the allowability of Administrative Costs charged to this Award;

e. All supporting documentation for the performance outcome and other information reported on the recipient's SF-425s, SF-PPRs, RESTORE Act Milestones Reports, and RESTORE Act Status of Performance Reports; and

f. Any reports, publications, and data sets from any research conducted under this Award.

2. If any litigation, claim, investigation, or audit relating to this Award or an activity funded with Award funds is started before the expiration of the three year period, the records must be retained until all litigation, claims, investigations, or audit findings involving the records have been resolved and final action taken.

3. If the recipient is authorized to enter into contracts to complete the approved scope of work, the recipient must include in its legal agreement with the contractor a requirement that the contractor retain all records in compliance with 2 C.F.R. § 200.333.

4. If the recipient is authorized to make subawards, the recipient must include in its legal agreement with the subrecipient a requirement that the subrecipient retain all records in compliance with 2 C.F.R. § 200.333.

G THE FEDERAL GOVERNMENT'S RIGHT TO INSPECT, AUDIT, AND INVESTIGATE

1. **Access to Records**

a. Treasury, the Treasury Office of Inspector General, and the Government Accountability Office have the right of timely and unrestricted access to any documents, papers or other records, including electronic records, of the recipient that are pertinent to this Award, in order to make audits, investigations, examinations, excerpts, transcripts, and copies of such documents. This right also includes timely and reasonable access to the recipient's personnel for the purpose of interview and discussion related to such documents. This right of access shall continue as long as records are required to be retained.

b. If the recipient is authorized to make subawards, the recipient must include in its legal agreement or contract with the subrecipient a requirement that the subrecipient make available to Treasury, the Treasury Office of Inspector General, and the Government Accountability Office any documents, papers or other records, including electronic records, of the subrecipient, that are pertinent to this Award, in order to make audits, investigations, examinations, excerpts, transcripts, and copies of such documents. This right also includes timely and reasonable access to the subrecipient's personnel for the purpose of interview and discussion related to such documents. This right of access shall continue as long as records are required to be retained (see Section F above).

If the recipient is authorized to enter into contracts to complete the approved scope of work, the recipient must include in its contract a requirement that the contractor make available to Treasury, the Treasury Office of Inspector General, and the Government Accountability Office any documents, papers or other records, including electronic records, of the contractor that are pertinent to this Award, in order to make audits, investigations, examinations, excerpts, transcripts, and copies of such documents. This right also includes timely and reasonable access to the contractor's personnel for the purpose of interview and discussion related to such documents. This right of access shall continue as long as records are retained (see Section F above).

2. Access to the Recipient's Sites.

The Treasury, the Treasury Office of Inspector General, and Government Accountability Office shall have the right during normal business hours to conduct announced and unannounced onsite and offsite physical visits of recipients and their subrecipients and contractors corresponding to the duration of their records retention obligation for this Award.

H AWARD DISBURSEMENT

1. Unless otherwise specified in a Special Award Condition, Treasury will make advance payments under this Award. However, if one of the following occurs, Treasury will require Award funds to be disbursed on a reimbursement basis either with or without pre-approval of drawdown requests: (1) Treasury determines that the recipient does not meet the financial management system standards (see Section E) included in these Standard Terms and Conditions, (2) Treasury determines that the recipient has not established procedures that will minimize the time elapsing between the transfer of funds and disbursement, or (3) Treasury determines that the recipient is in noncompliance with the RESTORE Act, Treasury's RESTORE Act regulations, other pertinent federal statutes, these Standard Terms and Conditions, Program-Specific Terms and Conditions, and/or any Special Award Conditions, and determines that the appropriate remedy is to require payment on a reimbursement basis.

2. If reimbursement is used, Treasury may require pre-approval of drawdown requests. If Treasury requires pre-approval of drawdown requests, Treasury will provide the recipient with instructions on what billing to submit. Treasury will make payment within 30 calendar days after receipt of the billing, unless Treasury determines the request to be improper, in which case payment will not be made.

3. To the extent available, the recipient must disburse funds available from program income, rebates, refunds, contract settlements, audit recoveries, and interest earned on such funds before requesting additional cash payments of Award funds.

4. Treasury will use the Department of Treasury's Automated Standard Application for Payment (ASAP) system to disburse payments of Award funds. In order to receive payments, the recipient must first enroll in ASAP.gov. Treasury creates and funds account(s) for recipients in ASAP.gov, and recipients access their account(s) online to request funds. All Award funds will be disbursed electronically using the Automated Clearing House (ACH) for next day or future day payments only. Awards paid through ASAP.gov may contain controls or withdrawal limits set by Treasury.

5. Requirements applicable to recipients that are states: Payment methods of state agencies or instrumentalities must be consistent with Treasury-State agreements under the Cash Management Improvement Act, 31 C.F.R. Part 205 "Rules and Procedures for Efficient Federal-State Funds Transfers," and Treasury Financial Manual (TFM) 4A-2000 Overall Disbursing Rules for All Federal Agencies.

6. Requirements applicable to recipients that are not states: The recipient must minimize the time between the transfer of funds from Treasury and the use of the funds by the recipient. Advance payments to the recipient must be limited to the minimum amounts needed and be timed to be in accordance with the actual, immediate cash requirements of the recipient in carrying out the purpose of the approved activity, project, or program. The timing and amount of advance payments must be as close as is administratively feasible to the actual disbursements by the parish or county for activity, project, or program costs and the proportionate share of any allowable indirect costs. Advances should not be drawn down more than three business days before expenditure.

Advanced funds not disbursed in a timely manner must be promptly returned to Treasury. The recipient must make timely payment to contractors (vendors) in accordance with the contract provisions.

7. Advances of federal funds must be deposited and maintained in United States Government-insured interest-bearing accounts whenever possible. The recipient is not required to maintain a separate depository account for receiving Award funds. If the recipient maintains a single depository account

where advances are commingled with funds from other sources, the recipient must maintain on its books a separate subaccount for the Award funds. Consistent with the national goal of expanding opportunities for women-owned and minority-owned business enterprises, the recipient is encouraged to ensure fair consideration of women-owned and minority-owned banks (a bank which is owned at least 50 percent by women or minority group members).

8. The recipient must maintain advances of federal funds in interest bearing accounts, unless one of the following conditions applies:

a. The recipient receives less than $120,000 in federal awards per year;

b. The best reasonably available interest bearing account would not be expected to earn interest in excess of $500 per year on federal cash balances; or

c. The depository would require an average or minimum balance so high that it would not be feasible within the expected federal and non-federal cash resources.

9. On an annual basis, the recipient must remit interest earned on federal advance payments deposited in interest-bearing accounts to the Department of Health and Human Services, Payment Management System, Rockville, MD 20852. Interest amounts up to

$500 per year may be retained by the recipient and used for administrative costs.

I EFFECT OF A GOVERNMENT SHUTDOWN ON DISBURSEMENTS AND THE AVAILABILITY OF TREASURY PERSONNEL

In the event of a federal government shutdown, Treasury will issue guidance to the recipient concerning the expected effects on this Award.

J NOTIFICATIONS AND PRIOR APPROVALS

1. **Notifications**

In addition to other notifications required under these Standard Terms and Conditions, the recipient must promptly notify Treasury in writing whenever any of the following is anticipated or occurs:

a. A vacancy or change to key personnel listed in the application.

b. Any termination of a subaward prior to the expiration of the agreement with the subrecipient.

c. Except for changes described in (2) below, the recipient may revise the budget without prior approval. If the recipient alters the budget, the recipient must provide a revised budget form (SF-424A or SF-424C, as applicable) to Treasury as an attachment to the SF-PPR, reflecting all budget revisions from the same period covered by the SF-PPR. Acceptance of such budget information does not constitute Treasury's approval of the revised budget.

2. Prior Approvals

a. The recipient must obtain prior written approval from Treasury whenever any of the following actions is anticipated:

i. A change in the scope or the objective of the activity, project, or program (even if there is no associated budget revision requiring prior written approval);

ii. A need to extend the period of performance;

iii. A need for additional federal funds to complete the activity, project, or program;

iv. The transfer of funds among direct cost categories or programs, functions, and activities if this Award exceeds the Simplified Acquisition Threshold (defined at 2 C.F.R. § 200.88) and the cumulative amount of such transfers exceeds or is expected to exceed 10 percent of the total budget as last approved by Treasury;

v. The subawarding, transferring or contracting out of any work under this Award (this provision does not apply to the acquisition of supplies, material, equipment or general support services), unless described in the application and approved in this Award.;

vi. Any transfer between the non-construction and construction activities; and

vii. The inclusion of costs that require prior approval in accordance with 2 C.F.R. Part 200, Subpart E—Cost Principles, unless described in the application and approved in this Award.

b. If requesting a no-cost extension to this Award, the request must be made no less than 30 days prior to the end of the period of performance for this Award. Any extension of the period of performance requires prior written approval from Treasury.

K PROPERTY

1. **General Requirements**

a. The recipient must comply with the property standards at 2 C.F.R. § 200.310 through § 200.316 for real property, equipment, supplies, and intangible property. The recipient must also comply with the RESTORE Act requirements concerning the acquisition of land and interests in land at 31 C.F.R. § 34.803.

b. No real property or interest in real property may be acquired under this Award unless authorized in the approved scope of work.

2. Supplies and Equipment

a. Requirements that are applicable to recipients that are states:

i. Equipment: The recipient must use, manage, and dispose of equipment acquired under this Award in accordance with state laws and procedures.

ii. Supplies: If the recipient has a residual inventory of unused supplies exceeding $5,000 in total aggregate value upon termination or completion of the activity, project, or program and the supplies are not needed for any other federal award, the recipient must report the value and the retention or sale of such supplies by submitting to Treasury a completed*SF-428 Tangible Personal Property Report* and *SF-428-B Final Report Form* no later than 60 days after the end of the Period of Performance.

b. Requirements that are applicable to recipients that are not states:

i. Equipment and Supplies: During the period of performance, the recipient must seek disposition instructions from Treasury for equipment and/or unused or residual supplies acquired under this Award if the current fair market value of the equipment and/or unused or residual supplies is greater than $5,000 per unit. The recipient must seek disposition instructions before disposing of the property by submitting a completed*SF-428 Tangible Personal Property Report* and *SF-428-C Disposition Request/Report*. Not later than 60 days after the end of the period of performance, the recipient must submit to Treasury a

completed *SF-428 Tangible Personal Property Report* and *SF-428-B Final Report Form* if the recipient retains any equipment with a current fair market value greater than $5,000 per unit or a residual inventory of unused supplies exceeding $5,000 in total aggregate value upon termination or completion of the activity, project, or program and the equipment and/or supplies are not needed for any other federal award.

L AMENDMENTS AND CLOSEOUT

1. **Amendments**

a. The terms of this Award may be amended with the written approval of the recipient and Treasury.

b. Treasury reserves the right to amend the terms of this Award if required by federal law or regulation.

c. Amendments must be requested in writing, and must include an explanation for the reason this Award should be amended.

2. Closeout

a. Treasury will close out this Award when it determines that all applicable administrative actions and all required work of this Award have been completed.

b. Within 90 calendar days after the end of the period of performance, unless the recipient requests, and Treasury approves, an extension, the recipient must submit any outstanding SF-PPR and RESTORE Act Status of Performance reports, as well as the required reporting on subawards, if applicable, plus a final SF-425 report. In the remarks section of the final SF-425 report, the recipient must describe by federal budget class category the final use of all funds received by the recipient and subrecipient (if applicable).

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c. The recipient must liquidate all obligations incurred under this Award not later than 90 calendar days after the end of the period of performance, unless the recipient requests, and Treasury approves, an extension.

d. The recipient must promptly refund any balances of unobligated cash that Treasury paid.

e. Following receipt of reports in paragraph (a) of this section, Treasury will make upward or downward adjustments to the allowable costs, and then make prompt payment to the recipient for allowable, unreimbursed costs.

f. The closeout of this Award does not affect any of the following:

i. The right of Treasury to disallow costs and recover funds on the basis of a later audit or other review;

ii. The obligation of the recipient to return any funds due as a result of later refunds, corrections, or other transactions including final indirect cost rate adjustments;

iii. The recipient’s obligations regarding audits, property management and disposition (if applicable), and records retention.

M REMEDIES FOR NONCOMPLIANCE

1. If Treasury determines that the recipient has failed to comply with the RESTORE Act, Treasury's RESTORE Act regulations, these Standard Terms and Conditions, Program- Specific Terms and Conditions, or any Special Award Conditions, Treasury may take any of the following actions (in addition to the remedies in Section A.3, above, applicable to Direct Component awards):

a. Impose additional Special Award Conditions such as:

i. Allowing payment only on a reimbursement basis, with pre-approval of drawdown requests,

ii. Requiring additional reporting or more frequent submission of the SF- 425, SF-PPR, or RESTORE Act Status of Performance Report,

iii. Requiring additional activity, project, or program monitoring,

iv. Requiring the recipient or one or more of its subrecipients to obtain technical or management assistance, and/or

v. Establishing additional actions that require prior approval;

b. Temporarily withhold payments pending correction of the noncompliance;

c. Disallow from funding from this Award all or part of the cost of the activity or action not in compliance;

d. Wholly or partly suspend or terminate this Award;

e. Withhold additional Awards; and/or

f. Initiate suspension or debarment proceedings as authorized under 2 C.F.R. Part 180.

Treasury will notify the recipient in writing of Treasury's proposed determination that an instance of noncompliance has occurred, provide details regarding the instance of noncompliance, and indicate the remedy that Treasury proposes to pursue. The recipient will have 30 calendar days to respond and provide information and documentation contesting Treasury's proposed determination or suggesting an alternative remedy.

Treasury will consider any and all information provided by the recipient and issue a final determination in writing, which will state Treasury's final findings regarding noncompliance and the remedy to be imposed.

2. In extraordinary circumstances, Treasury may require that any of the remedies above take effect immediately upon notice in writing to the recipient. In such cases, the recipient may contest Treasury's determination or suggest an alternative remedy in writing to Treasury, and Treasury will issue a final determination.

3. Instead of, or in addition to, the remedies listed above, Treasury may refer the noncompliance to the Treasury Office of Inspector General for investigation or audit. Treasury will refer all allegations of fraud, waste, or abuse to the Treasury Inspector General.

4. Treasury may terminate this Award in accordance with 2 C.F.R. § 200.339. Requests for termination by the recipient must also be in accordance with 2 C.F.R. § 200.339. Such requests must be in writing and must include the reasons for such termination, the effective date, and in the case of partial termination, the portion to be terminated. If Treasury determines that the remaining portion of this Award will not accomplish the purpose of this Award, Treasury may terminate this Award in its entirety.

5. If this Award is terminated, Treasury will update or notify any relevant government-wide systems or entities of any indications of poor performance as required by 41 U.S.C. § 417b and 31 U.S.C. § 3321 and implementing guidance at 2 C.F.R. Part 180.

6. Costs that result from obligations incurred by the recipient during a suspension or after termination are not allowable unless Treasury expressly authorizes them in the notice of suspension or termination or subsequently. However, costs during suspension or after termination are allowable if: (1) the costs result from obligations which were properly incurred by the recipient before the effective date of suspension or termination, and are not in anticipation of it; and (2) the costs would be allowable if the Award was not suspended or expired normally at the end of the period of performance in which the termination takes effect.

N DEBTS

1. **Payment of Debts Owed the Federal Government**

a. Any funds paid to the recipient in excess of the amount to which the recipient is finally determined to be authorized to retain under the terms of this Award constitute a debt to the federal government.

b. Any debts determined to be owed the federal government must be paid promptly by the recipient. A debt is delinquent if it has not been paid by the date specified in Treasury's initial written demand for payment, unless other satisfactory arrangements have been made. Interest, penalties, and administrative charges (see paragraphs c, d, and e below) shall be charged on delinquent debts in accordance with 31 U.S.C. § 3717 and 31 C.F.R. § 901.9. Treasury will refer any debt that is more than 180 days delinquent to Treasury's Bureau of the Fiscal Service for debt collection services.

c. The minimum annual interest rate to be assessed on any debts is the Department of the Treasury's Current Value of Funds Rate (CVFR). The CVFR is available online at https://www.fiscal.treasury.gov/fsreports/rpt/cvfr/cvfr_home.htm. The assessed rate shall remain fixed for the duration of the indebtedness, based on the beginning date in Treasury's written demand for payment.

d. Penalties on any debts shall accrue at a rate of not more than 6 percent per year or such other higher rate as authorized by law.

e. Administrative charges, that is, the costs of processing and handling a delinquent debt, shall be determined by Treasury.

f. Funds for payment of a debt must not come from other federally sponsored programs. Verification that other federal funds have not been used will be made, e.g., during on-site visits and audits.

2. Effect of Judgment Lien on Eligibility for Federal Grants, Loans, or Programs

Pursuant to 28 U.S.C. § 3201(e), unless waived in writing by Treasury, a debtor who has a judgment lien against the debtor's property for a debt to the United States shall not be eligible to receive any grant or loan that is made, insured, guaranteed, or financed directly or indirectly by the United States or to receive funds directly from the federal government in any program, except funds to which the debtor is entitled as beneficiary, until the judgment is paid in full or otherwise satisfied.

O NON-DISCRIMINATION REQUIREMENTS

No person in the United States shall, on the ground of race, color, national origin, handicap, age, religion, or sex, be excluded from participation in, be denied the benefits of, or be subject to discrimination under

any program or activity receiving federal financial assistance. The recipient is required to comply with all non-discrimination requirements summarized in this section, and to ensure that all subawards and contracts contain these nondiscrimination requirements.

1. Statutory Provisions

a. Title VI of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d et seq.) prohibits discrimination on the grounds of race, color, or national origin under programs or activities receiving federal financial assistance;

b. Title IX of the Education Amendments of 1972 (20 U.S.C. §§ 1681 et seq.) prohibits discrimination on the basis of sex under federally assisted education programs or activities;

c. Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794) prohibits discrimination on the basis of handicap under any program or activity receiving or benefitting from federal assistance;

d. The Age Discrimination Act of 1975, as amended (42 U.S.C. §§ 6101 et seq.), prohibits discrimination on the basis of age in programs or activities receiving federal financial assistance;

e. The Americans with Disabilities Act of 1990, as amended (42 U.S.C. §§ 12101 et seq.) ("ADA"), including the ADA Amendments Act of 2008 (Public Law 110-325, ("ADAAA"), prohibits discrimination on the basis of disability under programs, activities, and services provided or made available by state and local governments or instrumentalities or agencies thereto, as well as public or private entities that provide public transportation;

f. Any other applicable non-discrimination law(s).

2. Regulatory Provisions

a. Treasury Title VI regulations, 31 C.F.R. Part 22, implement Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. §§ 2000d, et seq.) which prohibits discrimination on the grounds of race, color, or national origin under programs or activities receiving federal financial assistance;

b. Treasury Title IX regulations, 31 C.F.R. Part 28, implement Title IX of the Education Amendments of 1972 (20 U.S.C. §§ 1681 et seq.) which prohibits discrimination on the basis of sex under federally assisted education programs or activities**;**

c. Treasury Age Discrimination regulations, 31 C.F.R. Part 23, implement the Age Discrimination Act of 1975, which prohibits discrimination on the basis of age in programs and activities receiving federal financial assistance.

3. Other Provisions

a. Parts II and III of EO 11246 (30 Fed. Reg. 12319, 1965), "Equal Employment Opportunity," as amended by EO 11375 (32 Fed. Reg. 14303, 1967) and 12086 (43 Fed. Reg. 46501, 1978), require federally assisted construction contracts to include the nondiscrimination provisions of §§ 202 and 203 of EO 11246 and Department of Labor regulations implementing EO 11246 (41 C.F.R. § 60-1.4(b), 1991).

b. EO 13166 (August 11, 2000), "Improving Access to Services for Persons With Limited English Proficiency," requires federal agencies to examine the services provided, identify any need for services to those with limited English proficiency (LEP), and develop and implement a system to provide those services so LEP persons can have meaningful access to them.

4. Title VII Exemption for Religious Organizations

Generally, Title VII of the Civil Rights Act of 1964, 42 U.S.C. §§ 2000e et seq., provides that it shall be an unlawful employment practice for an employer to discharge any individual or otherwise to discriminate against an individual with respect to compensation, terms, conditions, or privileges of employment because of such individual's race, color, religion, sex, or national origin. However, Title VII, 42 U.S.C. § 2000e-1(a), expressly exempts from the prohibition against discrimination on the basis of religion, a religious corporation, association, educational institution, or society with respect to the employment of individuals of a particular religion to perform work connected with the carrying on by such corporation, association, educational institution, or society of its activities.

5. Protections for Whistleblowers

In accordance with 41 U.S.C. § 4712, neither the recipient nor any of its subrecipients, contractors (vendors), or subcontractors may discharge, demote, or otherwise discriminate against an employee as a reprisal for disclosing information to a person or entity listed below that the employee reasonably believes is evidence of gross mismanagement of a federal contract or grant, a gross waste of federal funds, an abuse of authority relating to a federal contract or grant, a substantial and specific danger to public health or safety, or a violation of law, rule, or regulation related to a federal contract (including the competition for or negotiation of a contract) or grant:

a. A Member of Congress or a representative of a committee of Congress;

b. An Inspector General;

c. The Government Accountability Office;

d. A Treasury employee responsible for contract or grant oversight or management;

e. An authorized official of the Department of Justice or other law enforcement agency;

f. A court or grand jury; and/or

g. A management official or other employee of the recipient, subrecipient, vendor, contractor (vendor), or subcontractor who has the responsibility to investigate, discover, or address misconduct.

P REQUIREMENT TO CHECK DEBARMENT AND SUSPENSION STATUS OF SUBRECIPIENTS, CONTRACTORS, SUBCONTRACTORS AND VENDORS

1. Recipients that are authorized to enter into subawards or contracts to accomplish all or a portion of the approved scope of work must verify that a proposed subrecipient or contractor (if the contract is expected to equal or exceed $25,000) or its principals, does not appear on the federal government's Excluded Parties List prior to executing an agreement or contract with that entity. Recipients may not enter into a subaward or contract with an entity that appears on the Excluded Parties List. The Excluded Parties List is accessible at http://www.sam.gov.

2. The recipient must ensure that any agreements or contracts with subrecipients or contractors (vendors) require that they verify that their contractors (for contracts expected to equal or exceed $25,000), subcontractors (for subcontracts expected to equal or exceed $25,000), or principals that the subrecipients or contractors engage to accomplish the scope of work, if applicable, do not appear on the federal

government's Excluded Parties List. Subrecipients and contractors may not enter into a contract or subcontract with an entity, or that entity's principals, if that entity or its principals appear on the Excluded Parties List.

3. The recipient must include a term or condition in all lower tier covered transactions (subawards, contracts, and subcontracts described in 31 C.F.R. Part 19, subpart B) that the award is subject to 31 C.F.R. Part 19.

Q DRUG FREE WORKPLACE

The recipient must comply with the provisions of the Drug-Free Workplace Act of 1988 (Public Law 100-690, Title V, Sec. 5153, as amended by Public Law 105-85, Div. A, Title VIII, Sec. 809, as codified at 41 U.S.C. § 8102), and Treasury implementing regulations at 31 C.F.R. Part 20, which require that the recipient take steps to provide a drug-free workplace.

R LOBBYING RESTRICTIONS

1. **Lobbying Restrictions**

a. Solely for the purposes of Section R of these Standard Terms and Conditions, "recipient" is used as defined at 31 C.F.R. § 21.105(0). Solely for the purposes of Section R of these Standard Terms and Conditions, "award recipient" refers to the recipient of this RESTORE Act award from Treasury.

b. All recipients must comply with the provisions of 31 U.S.C. § 1352, as amended, and with regulations at 31 C.F.R. Part 21. No appropriated funds may be expended by the recipient of a Federal grant to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the making of any Federal grant or the extension, continuation, renewal, amendment, or modification of any Federal grant.

2. Certification

a. Each person who requests or receives from Treasury a RESTORE Act grant shall file with Treasury a certification, set forth in Appendix A of 31 C.F.R. Part 21, that the person has not made, and will not make, any payment prohibited under 31 U.S.C. § 1352, as amended.

b. The certification shall be filed pursuant to 31 C.F.R. § 21.100(a) and (b).

c. Any subrecipient, at any tier, who receives a subaward exceeding $100,000 under this award, shall file with the tier above them a certification, set forth in appendix A of 31 C.F.R. Part 21, that the subrecipient as not made, and will not make,

any payment prohibited by 31 C.F.R. § 21.100(a). Pursuant to 31 C.F.R. 21.100(d), the certification shall be filed to the next tier above.

d. Any contractor or subcontractor, at any tier, who receives a contract or subcontract exceeding $100,000 under this award, shall file with the tier above them a certifications, set forth in Appendix A of 31 C.F.R. Part 21, that the contractor or subcontractor has not made, and will not make, any payment prohibited by 31 U.S.C. § 1352, as amended. Pursuant to 31 C.F.R. 21.100(d), the certification shall be filed to the next tier above.

e. Every certification filed shall be treated as a material representation of fact upon which all receiving tiers shall rely. All liability arising from an erroneous representation shall be borne solely by the tier filing that representation and shall not be shared with any tier to which the erroneous representation if forwarded. Submitting an erroneous certification or disclosure constitutes a failure to file the required certification. If a person fails to file a required certification, the United States may pursue all available remedies, including those authorized by 31 U.S.C. § 1352.

3. Disclosure of Lobbying Activities

a. The award recipient of this RESTORE Act grant from Treasury, if this grant exceeds $100,000, shall file with Treasury disclosure form SF-LLL, set forth in Appendix B of 31 CF.R. Part 21, if that award recipient is paid or will pay any funds, other than Federal appropriated funds, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal grant.

b. Every recipient of a subaward under this RESTORE Act grant from Treasury, if this grant exceeds $100,000, shall file with the tier above it the disclosure form SF-LLL, set forth in Appendix B of 31 C.F.R. Part 21, if that recipient has paid or will pay any funds, other than Federal appropriated funds, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal grant. Each tier who receives the completed and signed SF-LLL disclosure form shall forward it to the tier above it, and the award recipient of this RESTORE Act grant from Treasury will forward it to Treasury.

c. Every recipient of a contract or subcontract under this RESTORE Act grant from Treasury, if this grant exceeds $100,000, shall file with the tier above it the disclosure form SF-LLL, set forth in Appendix B of

31 C.F.R. Part 21, if that recipient has paid or will pay any funds, other than Federal appropriated funds, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal grant. Each tier who receives the completed and signed SF-LLL disclosure form shall forward it to the tier above it, and the award recipient of this RESTORE Act grant from Treasury will forward it to Treasury.

d. Every SF-LLL disclosure form filed shall be treated as a material representation of fact upon which all receiving tiers shall rely. All liability arising from an erroneous representation shall be borne solely by the tier filing that representation and shall not be shared with any tier to which the erroneous representation is forwarded. Submitting an erroneous certification or disclosure constitutes a failure to file the required certification. If a person fails to file a required disclosure, the United States may pursue all available remedies, including those authorized by 31 US.C. § 1352,

e. Pursuant to 31 C.F.R. § 21.110(c), every recipient must file a new disclosure form at the end of each calendar quarter in which a payment, or an agreement to make a payment, is made which would have otherwise required reporting at the time of application. Moreover, if an event occurs during the calendar quarter which materially affects the accuracy of information reported on the disclosure form previously submitted, the submitter must file a new disclosure form. Events which “materially affect” the accuracy of information already reported include:

i. A cumulative increase of $25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action;

ii. A change in the persons(s) influencing or attempting to influence; and/or

iii. A change in the Federal official(s) contacted to influence or attempt to influence a covered Federal action,

f. The award recipient must submit its form SF-LLLs, as well as those received from subrecipients, contractors and subcontractors, to Treasury within 30 calendar days following the end of the calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed.

g. The award recipient must include a statement in all subaward, contracts and subcontracts exceeding $100,000 in federal funds, that the subaward, contract, or subcontract is subject to 31 U.S.C. § 1352,

h. The award recipient must require subrecipients, contractors and subcontractors to submit form SF-LLL to the award recipient with 15 calendar days following the end of the calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure from previously filed.

S PROCUREMENT

1. The recipient must comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 C.F.R. Part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired by the preceding fiscal year exceeded $10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

2. When the recipient makes a subaward to a subrecipient that is authorized to enter into contracts for the purpose of completing the subaward scope of work, the recipient must require the subrecipient to comply with the requirements contained in this section.

3. The recipient, subrecipient, contractor, and/or subcontractor must not sub-grant or sub- contract any part of the approved project to any agency or employee of Treasury and/or other federal department, agency, or instrumentality without the prior written approval of Treasury. Treasury will notify the recipient in writing of the final determination.

4. Requirements applicable to recipients and subrecipients that are states: When executing procurement actions under this Award, the recipient must follow the same policies and procedures it uses for procurements from its non-federal funds. The recipient must ensure that every purchase order or other contract contains any clauses required by federal statutes and EOs and their implementing regulations, including all of the provisions listed in Appendix II to 2 C.F.R. Part 200— *Contract Provisions for Non-Federal Entity Contracts under Federal Awards,* as well as any other provisions required by law or regulations.

5. Requirements applicable to recipients and subrecipients that are not states: The recipient must follow all procurement requirements set forth in 2 C.F.R. §§ 200.318, 200.319, 200.320, 200.321, 200.323, and 200.324. In addition, all contracts executed by the recipient to accomplish the approved scope of work must contain any clauses required by federal statutes and EOs and their implementing regulations, including all of the provisions listed in Appendix II to 2 C.F.R. Part 200— *Contract Provisions for Non-Federal Entity Contracts under Federal Awards* .

6. Contracting with small and minority businesses, women's business enterprise, and labor surplus area firms, 2 C.F.R. § 200.321. Recipients and subrecipients that are not states must take all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible. Affirmative steps must include:

a. Placing qualified small and minority businesses and women's business

enterprises on solicitation lists;

b. Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;

c. Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority business, and women's business enterprises;

d. Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises;

e. Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce; and,

f. Requiring the prime contractor, if subcontracts are to be let, to take the affirmative steps listed in (a) through (e) of this paragraph.

T RESEARCH INVOLVING HUMAN SUBJECTS

1. No research involving human subjects is permitted under this Award unless expressly authorized by a special award condition, or otherwise in writing by Treasury.

2. Federal policy defines a human subject as a living individual about whom an investigator conducting research obtains (1) data through intervention or interaction with the individual, or (2) identifiable private information. Research means a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge.

3. The recipient and subrecipient, as appropriate, must maintain appropriate policies and procedures for the protection of human subjects. In the event it becomes evident that human subjects may be involved in

this project, the recipient must submit appropriate documentation to Treasury for approval by the appropriate Treasury officials. This documentation may include:

a. Documentation establishing approval of the project by an institutional review board (IRB) approved for federal-wide use under Department of Health and Human Services guidelines;

b. Documentation to support an exemption for the project;

c. Documentation to support deferral for an exemption or IRB review; or

d. Documentation of IRB approval of any modification to a prior approved protocol or to an informed consent form.

4. No work involving human subjects may be undertaken, conducted, or costs incurred and/or charged for human subjects research, until the appropriate documentation is approved in writing by Treasury.

U ENVIRONMENTAL REQUIREMENTS

The recipient must comply with all environmental standards, and provide information requested by Treasury relating to compliance with environmental standards, including but not limited to the following federal statutes, regulations, and EOs. If the recipient is permitted to make any subawards, the recipient must include all of the environmental statutes, regulations, and executive orders listed below in any agreement or contract with a subrecipient, and require the subrecipient to comply with all of these and to notify the recipient if the subrecipient becomes aware of any impact on the environment that was not noted in the recipient's approved application package:

1. National Historic Preservation Act, as amended (54 U.S.C. § 300101 et seq.) and Archeological and Historic Preservation Act, as amended (54 U.S.C. § 312501 et seq.)

2. The National Environmental Policy Act of 1969, as amended (42 U.S.C. § 4321 et seq.)

3. Clean Air Act, as amended (42 U.S.C. § 7401 et seq.), Clean Water Act, as amended (33 U.S.C. § 1251 et seq.), and EO 11738

4. The Flood Disaster Protection Act of 1973, as amended (42 U.S.C. § 4002 et seq.)

5. The Endangered Species Act of 1973, as amended, (16 U.S.C. § 1531 et seq.)

6. The Coastal Zone Management Act, as amended, (16 U.S.C. § 1451 et seq.)

7. The Coastal Barriers Resources Act, as amended, (16 U.S.C. § 3501 et seq.)

8. The Wild and Scenic Rivers Act, as amended, (16 U.S.C. § 1271 et seq.)

9. The Safe Drinking Water Act of 1974, as amended, (42 U.S.C. § 300f-j)

10. The Resource Conservation and Recovery Act of 1976, as amended, (42 U.S.C. § 6901 et seq.)

11. The Comprehensive Environmental Response, Compensation, and Liability Act (Superfund) (42 U.S.C. § 9601 et seq.) and the Community Environmental Response Facilitation Act (42 U.S.C. § 9601 note)

12. Magnuson-Stevens Fishery Conservation and Management Act, as amended (16 U.S.C.

§1801)

13. Marine Mammal Protection Act, as amended (16 U.S.C § 31)

14. Migratory Bird Treaty Act, as amended (16 U.S.C. §§ 703-712)

15. Responsibilities of Federal Agencies to Protect Migratory Birds, EO 13186

16. Bald and Golden Eagle Protection Act, as amended (16 U.S.C. § 668-668d)

17. Marine Protection, Research and Sanctuaries Act (33 U.S.C. §§ 1401-1445 and 16 U.S.C.

§§ 1431—1445)

18. National Marine Sanctuaries Act, as amended (16 U.S.C. § 1431 et seq.)

19. Rivers and Harbors Act of 1899 (33 U.S.C § 407)

20. Environmental Justice in Minority Populations and Low Income Populations, EO 12898, as amended

21. Flood Management, EO 11988, as amended by EO 13690, and Protection of Wetland, EO11990, May 24, 177, as amended by EO 12608

22. Farmland Protection Policy Act, as amended (7 U.S.C. § 4201 et. seq.)

23. Coral Reef Protection, EO 13089

24. Invasive Species, EP 13112

V MISCELLANEOUS REQUIREMENTS AND PROVISIONS

The recipient must comply with all miscellaneous requirements and provisions described in this section and, when applicable, require its subrecipients, contractors, and subcontractors to comply. This list is not exclusive:

1. Prohibition Against Assignment by the Recipient

Notwithstanding any other provision of this Award, the recipient must not transfer, pledge, mortgage, or otherwise assign this Award, or any interest therein, or any claim arising thereunder, to any party or parties, banks, trust companies, or other financing or financial institutions without the express written approval of Treasury.

2. Disclaimer Provisions

a. The United States expressly disclaims any and all responsibility or liability to the recipient or third persons for the actions of the recipient or third persons resulting in death, bodily injury, property damages, or any other losses resulting in any way from the performance of this Award or any other losses resulting in any way from the performance of this Award or any subaward, contract, or subcontract under this Award.

b. The acceptance of this Award by the recipient does not in any way constitute an agency relationship between the United States and the recipient.

3. Prohibited and Criminal Activities

a. The Program Fraud Civil Remedies Act of 1986 (31 U.S.C. §§ 3801-3812), provides for the imposition of civil penalties against persons who make false, fictitious, or fraudulent claims to the federal government for money (including money representing grants, loans or other benefits).

b. False Statements, as amended (18 U.S.C. § 1001) provides that whoever makes or presents any materially false, fictitious, or fraudulent statements to the United States shall be subject to imprisonment of not more than five years.

c. False, Fictitious, or Fraudulent Claims, as amended (18 U.S.C. § 287) provides that whoever makes or presents a false, fictitious, or fraudulent claim against or to the United States shall be subject to imprisonment of not more than five years and shall be subject to a fine in the amount provided in 18 U.S.C. § 287.

d. False Claims Act, as amended (31 U.S.C. 18 U.S.C. § 3729 et seq.), provides that suits under this act can be brought by the federal government, or a person on behalf of the federal government, for false claims under federal assistance programs

e. Copeland "Anti-Kickback" Act, as amended (18 U.S.C. § 874 and 40 U.S.C. § 276c), prohibits a person or organization engaged in a federally supported project from enticing an employee working on the project from giving up a part of his compensation under an employment contract. The Copeland "Anti-Kickback" Act also applies to contractors and subcontractors pursuant to 40 U.S.C. § 3145.

4. Political Activities

The recipient must comply, as applicable, with provisions of the Hatch Act, as amended (5 U.S.C. §§ 1501-1508 and §§ 7321-7326) which limit the political activities of employees whose principal employment activities are funded in whole or in part with federal funds.

5. American-Made Equipment and Products

The recipient is hereby notified that it is encouraged, to the greatest extent practicable, to purchase American-made equipment and products with funding provided under this Award.

6. Increasing Seat Belt Use in the United States

Pursuant to EO 13043, the recipient should encourage its employees and contractors to enforce on-the-job seat belt policies and programs when operating company-owned, rented or personally owned vehicles.

7. Minority Serving Institutions (MSIs) Initiative

Pursuant to EOs 13555 and13270, as amended, Treasury is strongly committed to broadening the participation of MSIs in its financial assistance programs. Treasury's goals include achieving full participation of MSIs in order to advance the development of human potential, strengthen the nation's capacity to provide high-quality education, and increase opportunities for MSIs to participate in and benefit from federal financial assistance programs. Treasury encourages recipients to include meaningful participation of MSIs. Institutions eligible to be considered MSIs are listed on the Department of Education website at http://www2.ed.gov/about/offices/list/ocr/edlite- minorityinst.html.

8. Research Misconduct

Treasury adopts, and applies to Awards for research, the Federal Policy on Research Misconduct (Federal Policy) issued by the EO of the President's Office of Science and Technology Policy on December 6,

2000 (65 Fed. Reg. 76260 (2000)). As provided for in the Federal Policy, research misconduct refers to the fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results. Research misconduct does not include honest errors or differences of opinion.

Recipients that conduct research funded by Treasury must foster an atmosphere conducive to the responsible conduct of sponsored research by safeguarding against and resolving allegations of research misconduct. Recipients also have the primary responsibility to prevent, detect, and investigate allegations of research misconduct and, for this purpose, may rely on their internal policies and procedures, as appropriate, to do so. Award funds expended on an activity that is determined to be invalid or unreliable because of research misconduct may result in appropriate enforcement action under the Award, up to and including Award termination and possible suspension or debarment.

Treasury requires that any allegation that contains sufficient information to proceed with an inquiry be submitted to Treasury, which will also notify the Treasury Office of Inspector General of such allegation. Once the recipient has investigated the allegation, it will submit its findings to Treasury. Treasury may accept the recipient's findings or proceed with its own investigation; Treasury shall inform the recipient of the Treasury's final determination.

9. Care and Use of Live Vertebrate Animals

Recipients must comply with the Laboratory Animal Welfare Act of 1966 (Public Law 89- 544), as amended, (7 U.S.C. § 2131 et seq.) (animal acquisition, transport, care, handling, and use in projects), and implementing regulations, 9 C.F.R. Parts 1, 2, and 3; the Endangered Species Act, as amended, (16 U.S.C. § 1531 et seq.); Marine Mammal Protection Act, as amended, (16 U.S.C. § 1361 et seq.) (taking possession, transport, purchase, sale, export or import of wildlife and plants); the Nonindigenous Aquatic Nuisance Prevention and Control Act, as amended, (16 U.S.C. § 4701 et seq.) (ensure preventive measures are taken or that probable harm of using species is minimal if there is an escape or release); and all other applicable statutes pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by federal financial assistance.

10. The Trafficking Victims Protection Act of 2000, as amended, (22 U.S.C. § 7104(g)), and the implementing regulations at 2 C.F.R. Part 175

The Trafficking Victims Protection Act of 2000 authorizes termination of financial assistance provided to a private entity, *as defined in 2 C.F.R.* §175.25(d), without penalty to the federal government, if the recipient or subrecipient engages in certain activities related to trafficking in persons.

a. *Provisions applicable to a recipient that is a private entity*

1. You as the recipient, your employees, subrecipients under this Award, and subrecipients' employees may not—

i. Engage in severe forms of trafficking in persons during the period of time that this Award is in effect;

ii. Procure a commercial sex act during the period of time that this Award is in effect; or

iii. Use forced labor in the performance of this Award or subawards under this Award.

2. We as the federal awarding agency may unilaterally terminate this Award, without penalty, if you or a subrecipient that is a private entity —

i. Is determined to have violated a prohibition in paragraph a.1 of this Section V.10; or

ii. Has an employee who is determined by the agency official authorized to terminate this Award to have violated a prohibition in paragraph a.1 of this Section V.10 through conduct that is either—

A. Associated with performance under this Award; or

B. Imputed to you or the subrecipient using the standards and due process for imputing the conduct of an individual to an organization that are provided in 2 C.F.R. Part 180, "OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," as implemented by our agency at 31 C.F.R. Part 19.

b. *Provision applicable to a recipient other than a private entity* . We as the federal awarding agency may unilaterally terminate this Award, without penalty, if a subrecipient that is a private entity—

1. Is determined to have violated an applicable prohibition in paragraph a.1 of this Section V.10; or

2. Has an employee who is determined by the agency official authorized to terminate this Award to have violated an applicable prohibition in paragraph

a.1 of this Section V.10 through conduct that is either—

i. Associated with performance under this Award; or

ii. Imputed to the subrecipient using the standards and due process for imputing the conduct of an individual to an organization that are provided in 2 C.F.R. Part 180, "OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," as implemented by our agency at 31 C.F.R. Part 19.

c. *Provisions applicable to any recipient*.

1. You must inform us immediately of any information you receive from any source alleging a violation of a prohibition in paragraph a.1 of this Section V.10.

2. Our right to terminate unilaterally that is described in paragraph a.2 or b of this Section V.10:

i. Implements section 106(g) of the Trafficking Victims Protection Act of 2000 (TVPA), as amended (22 U.S.C. § 7104(g)), and

ii. Is in addition to all other remedies for noncompliance that are available to us under this Award.

3. You must include the requirements of paragraph a.1 of this Section V.10 in any subaward you make to a private entity.

d. *Definitions*. For purposes of this award term:

1. "Employee" means either:

i. An individual employed by you or a subrecipient who is engaged in the performance of the project or program under this Award; or

ii. Another person engaged in the performance of the project or program under this Award and not compensated by you including, but not limited to, a volunteer or individual whose services are contributed by a third party as an in-kind contribution toward cost sharing or matching requirements.

2. "Forced labor" means labor obtained by any of the following methods: the recruitment, harboring, transportation, provision, or obtaining of a person for labor or services, through the use of force, fraud, or coercion for the purpose of subjection to involuntary servitude, peonage, debt bondage, or slavery.

3. “Private entity”:

i. Means any entity other than a state, local government, Indian tribe, or foreign public entity, as those terms are defined in 2 C.F.R. § 175.25.

ii. Includes:

A. A nonprofit organization, including any nonprofit institution of higher education, hospital, or tribal organization other than one included in the definition of Indian tribe at 2 C.F.R. § 175.25(b).

B. A for-profit organization

4. “Severe forms of trafficking in persons,” “commercial sex act,” and “coercion” have the meanings given at § 103 of the TVPA, as amended (22 U.S.C. § 7102).

11. The Federal Funding Accountability and Transparency Act of 2006, as amended, (Pub. L. No. 109-282, 31 U.S.C. § 6101 note)

a. The award term at Appendix A of 2 C.F.R. Part 170 is hereby incorporated by reference.

b. The Federal Funding Accountability and Transparency Act of 2006 (FFATA) requires information on federal awards to be made available to the public via a single, searchable website. This information is available at www.USASpending.gov. The FFATA Subaward Reporting System (FSRS) is the reporting tool federal prime awardees (*i.e.*, prime contractors and prime grants recipients) use to capture and report subaward and executive compensation data regarding their first-tier subawards to meet the FFATA reporting requirements. Prime grant awardees will report against sub-grants awarded. The subaward information entered in FSRS will then be displayed at http:// www.USASpending.gov.

c. Recipients of RESTORE Act funding are subject to FFATA subaward reporting requirements as outlined in the OMB guidance on FFATA issued August 27, 2010. The recipient is required to file a FFATA subaward report by the end of the month following the month in which the recipient makes any subaward greater than or equal to $25,000. This includes any action that brings the cumulative total award to $25,000 or more. This report must be filed electronically at http://www.fsrs.gov.

d. The recipient must report total compensation for each of its five most highly compensated executives for the preceding completed fiscal year, by the end of the month following the month in which this Award is made, and annually thereafter if—

i. The total federal funding authorized to date under this Award is $25,000 or more; and

ii. In the preceding fiscal year, the recipient received—

1) 80 percent or more of annual gross revenues from federal procurement contracts (and subcontracts) and federal financial assistance subject to FFATA, as defined at 2 C.F.R. § 170.320 (and subawards); and

2) $25,000,000 or more in annual gross revenues from federal procurement contracts (and subcontracts) and federal financial assistance subject to FFATA, as defined at 2 C.F.R. 170.320 (and subawards); and

iii. The public does not have access to information about the compensation of the executives through periodic reports filed under § 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or § 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at http://www.sec.gov/answers/execomp.htm.)

e. The recipient must report on the total compensation of its subrecipients' five most highly compensated executives, as required by FFATA, and must include provisions in every executed contract or agreement with affected subrecipients requiring the subrecipient to provide all information necessary for the recipient to report on subrecipient executive compensation. The recipient must report on subrecipient executive compensation by the end of the month following the month during which the recipient makes the subaward.

f. The recipient must keep its information current in SAM (System for Award Management, which is the successor to the Central Contractor Registry, (CCR)) at least until submission of the final SF-425 or receipt of the final Award payment, whichever is later. This requires that the recipient review and update the information at least annually after the initial registration, and more frequently if required by changes in the recipient's information. SAM is the federal repository into which an entity must provide information required for the conduct of business as a recipient. Additional information about registration procedures may be found at the System for Award Management Internet site (currently at https://www.sam.gov/portal/public/SAM/).

g. If the recipient is authorized to make subawards under this Award, the recipient must notify potential subrecipients that the recipient may not make a subaward to any entity unless that entity has provided its Data Universal Numbering System (DUNS) number to the recipient. A DUNS number is the nine-digit number established and assigned by Dun and Bradstreet, Inc. to uniquely identify business entities.

12. Recipient Integrity and Performance Matters (80 FR 43301, July 22, 2015) Reporting of Matters Related to Recipient Integrity and Performance

a. *General Reporting Requirement*

If the total value of the recipient's currently active grants, cooperative agreements, and procurement contracts from all Federal awarding agencies exceeds

$10,000,000 for any period of time during the period of performance of this Federal award, then the recipient during that period of time must maintain the accuracy of information reported to the System for Award Management (SAM) that is made available in the designated integrity and performance system (currently the Federal Awardee Performance and Integrity Information System (FAPIIS)) about civil, criminal, or administrative proceedings described in paragraph b. of this award term and condition. This is a statutory requirement under § 872 of Public Law 110-417, as amended (41 U.S.C. § 2313). As required by § 3010 of Public Law 111-212, all information posted in the designated integrity and performance system on or after April 15, 2011, except past performance reviews required for Federal procurement contracts, will be publicly available.

b. *Proceedings About Which The Recipient Must Report*

The recipient must submit the information required about each proceeding that:

i. Is in connection with the award or performance of a grant, cooperative agreement, or procurement contract from the Federal Government;

ii. Reached its final disposition during the most recent five year period; and

iii. Is one of the following:

1) A criminal proceeding that resulted in a conviction, as defined in paragraph e. of this award term and condition;

2) A civil proceeding that resulted in a finding of fault and liability and payment of a monetary fine, penalty, reimbursement, restitution, or damages of $5,000 or more;

3) An administrative proceeding, as defined in paragraph e. of this award term and condition, that resulted in a finding of fault and liability and your payment of either a monetary fine or penalty of

$5,000 or more or reimbursement, restitution, or damages in excess of $100,000; or

4) Any other criminal, civil, or administrative proceeding if:

a) It could have led to an outcome described in paragraph b.iii. 1), 2), or 3) of this award term and condition;

b) It had a different disposition arrived at by consent or compromise with an acknowledgment of fault on your part; and

c) The requirement in this award term and condition to disclose information about the proceeding does not conflict with applicable laws and regulations.

c. *Reporting Procedures*

Enter in the SAM Entity Management area the information that SAM requires about each proceeding described in paragraph b of this award term and condition. The recipient does not need to submit the information a second time under assistance awards that the recipient received if they already provided the information through SAM because they were required to do so under Federal procurement contracts that they were awarded.

d. *Reporting Frequency*

During any period of time when the recipient is subject to the requirement in paragraph1 of this award term and condition, the recipient must report proceedings information through SAM for the most recent five year period, either to report new information about any proceeding(s) that they have not reported previously or affirm that there is new information to report. Recipients that have Federal contract, grant, and cooperative agreement awards with a cumulative total value greater than $10,000,000 must disclose semiannually any information about the criminal, civil, and administrative proceedings.

e. *Definitions*

For purposes of this award term and condition:

i. Administrative proceeding means a non-judicial process that is adjudicatory in nature in order to make a determination of fault or liability (*e.g.*, Securities and Exchange Commission Administrative proceedings, Civilian Board of Contract Appeals proceedings, and Armed Services Board of Contract Appeals proceedings). This includes proceedings at the Federal and State level but only in connection with performance of a Federal contract or grant. It does not include audits, site visits, corrective plans, or inspection of deliverables.

ii. Conviction, for purposes of this award term and condition, means a judgment or conviction of a criminal offense by any court of competent jurisdiction, whether entered upon a verdict or a plea, and includes a conviction entered upon a plea of nolo contendere.

iii. Total value of currently active grants, cooperative agreements, and procurement contracts includes—

1) Only the Federal share of the funding under any Federal award with a recipient cost share or match; and

2) The value of all expected funding increments under a Federal award and options, even if not yet exercised.

13. Publications and Signage

Any publications (except scientific articles or papers appearing in scientific, technical, or professional journals) or signage produced with funds from this Award, or informing the public about the activities funded in whole or in part by this Award, must clearly display the following language: “This project was paid for [in part] with federal funding from the Department of the Treasury under the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act of 2012 (RESTORE Act).” Publications (except scientific articles or papers appearing in scientific, technical, or professional journals) produced with funds from this Award must display the following additional language: “The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of the Department of the Treasury.”

14. Homeland Security Presidential Directive 12

If the performance of this Award requires the recipient’s personnel to have routine access to Treasury-controlled facilities and/or Treasury-controlled information systems (for purpose of this term “routine access” is defined as more than 180 days), such personnel must undergo the personal identity verification credential process. In the case of foreign nationals, Treasury will conduct a check with U.S. Citizenship and Immigration Services’ (USCIS) Verification Division, a component of the Department of Homeland Security (DHS), to ensure the individual is in a lawful immigration status and that he or she is eligible for employment within the United States. Any items or services delivered under this Award must comply with Treasury personal identity verification procedures that implement Homeland Security Presidential Directive 12, “Policy for a Common Identification Standard for Federal Employees and Contractors”, FIPS PUB 201, as amended, and OMB Memorandum M-05-24, as amended. The recipient must ensure that its subrecipients and contractors (at all tiers) performing work under this Award comply with the requirements contained in this Section V.14. Treasury may delay final payment under this Award if the subrecipient or contractor fails to comply with the requirements listed in the section below. The recipient must insert the following term in all subawards and contracts when the subrecipient or contractor is required to have routine physical access to a Treasury-controlled facility or routine access to a Treasury-controlled information system:

a. The subrecipient or contractor must comply with Treasury personal identity verification procedures identified in the subaward or contract that implement Homeland Security Presidential Directive 12 (HSPD-12), Office of Management and Budget (OMB) Guidance M-05-24, as amended, and Federal Information Processing Standards Publication, FIPS PUB 140-2, as amended, for all employees under this subaward or contract who require routine physical access to a federally controlled facility or routine access to a federally controlled information system.

b. The subrecipient or contractor must account for all forms of government-provided identification issued to the subrecipient or contractor employees in connection with performance under this subaward or contract. The subrecipient or contractor

must return such identification to the issuing agency at the earliest of any of the following, unless otherwise determined by Treasury:

i. When no longer needed for subaward or contract performance;

ii. Upon completion of the subrecipient or contractor employee’s employment; or

iii. Upon subaward or contract completion or termination.

15. Foreign Travel

a. The recipient and subrecipient may not use funds from this Award for travel outside of the United States unless Treasury provides prior written approval.

b. The recipient and subrecipient must comply with the provisions of the Fly America Act, as amended, (49 U.S.C. § 40118). The implementing regulations of the Fly America Act are found at 41 C.F.R. §§ 301-10.131–301-10.143.

c. The Fly America Act requires that federal travelers and others performing U.S. Government-financed air travel must use U.S. flag air carriers, to the extent that service by such carriers is available. Foreign air carriers may be used only in specific instances, such as when a U.S. flag air carrier is unavailable, or use of

U.S. flag air carrier service will not accomplish the agency's mission.

d. One exception to the requirement to fly U.S. flag carriers is transportation provided under a bilateral or multilateral air transport agreement, to which the United States Government and the government of a foreign country are parties, and which the Department of Transportation has determined meets the requirements of the Fly America Act pursuant to 49 U.S.C. § 40118(b). The United States Government has entered into bilateral/multilateral "Open Skies Agreements" (U.S. Government Procured Transportation) that allow federal funded transportation services for travel and cargo movements to use foreign air carriers under certain circumstances. There are multiple "Open Skies Agreements" currently in effect. For more information about the current bilateral and multilateral agreements, visit the GSA website http://www.gsa.gov/portal/content/103191. Information on the Open Skies agreements (U.S. Government Procured Transportation) and other specific country agreements may be accessed via the Department of State's website http://www.state.gov/e/eeb/tra/.

e. If a foreign air carrier is anticipated to be used for any portion of travel funded under this Award, the recipient must receive prior approval from the Treasury. When requesting such approval, the recipient must provide a justification in accordance with guidance provided by 41 C.F.R. § 301–10.142, which requires the recipient to provide Treasury with the following: name; dates of travel; origin and destination of travel; detailed itinerary of travel; name of the air carrier and flight number for each leg of the trip; and a statement explaining why the recipient meets one of the exceptions to the regulations. If the use of a foreign air carrier is pursuant to a bilateral agreement, the recipient must provide Treasury with a copy of the agreement or a citation to the official agreement available on the GSA website. Treasury shall make the final determination and notify the recipient in writing. Failure to adhere to the provisions of the Fly America Act will result in the recipient not being reimbursed for any transportation costs for which the recipient improperly used a foreign air carrier.

16. Export Control

a. This clause applies to the extent that this Award involves access to export- controlled items.

b. In performing this financial assistance Award, the recipient may gain access to items subject to export control (export-controlled items) under the Export Administration Regulations (EAR) issued by the Department of Commerce (DOC). The recipient is responsible for compliance with all applicable laws and regulations regarding export-controlled items, including the EAR's deemed exports and re-exports provisions. The recipient shall establish and maintain effective export compliance procedures throughout performance of the Award. At a minimum, these export compliance procedures must include adequate controls of physical, verbal, visual, and electronic access to export-controlled items, including by foreign nationals.

c. Definitions:

i. Export-controlled items. Items (commodities, software, or technology), that are subject to the EAR (15 C.F.R. §§ 730–774), implemented by the DOC's Bureau of Industry and Security. These are generally known as "dual-use" items, items with a military and commercial application.

ii. Deemed Export/Re-export. The EAR defines a deemed export as a release of export-controlled items (specifically, technology or source code) to a foreign national in the U.S. Such release is "deemed" to be an export to the home country of the foreign national. 15 C.F.R. § 734.2(b)(2)(ii). A release may take the form of visual inspection, oral exchange of information, or the application abroad of knowledge or technical experience acquired in the United States. If such a release occurs abroad, it is considered a deemed re-export to the foreign national's home country. Licenses from DOC may be required for deemed exports or re-exports.

d. The recipient shall control access to all export-controlled items that it possesses or that comes into its possession in performance of this Award, to ensure that access to, or release of, such items are restricted, or licensed, as required by applicable federal statutes, EOs, and/or regulations, including the EAR.

e. To the extent the recipient wishes to provide foreign nationals with access to export-controlled items, the recipient shall be responsible for obtaining any necessary licenses, including licenses required under the EAR for deemed exports or deemed re-exports.

f. Nothing in the terms of this Award is intended to change, supersede, or waive the requirements of applicable federal statutes, EOs, and/or regulations.

g. Compliance with this Section V.15 will not satisfy any legal obligations the recipient may have regarding items that may be subject to export controls administered by other agencies such as the Department of State, which has jurisdiction over exports of munitions items subject to the International Traffic in Arms Regulations (ITAR) (22 C.F.R. §§ 120–130), including releases of such items to foreign nationals.

h. The recipient shall include this clause, including this paragraph (i), in all lower tier transactions (subawards, contracts, and subcontracts) under this Award that may involve access to export-controlled items.

SUPPLEMENTAL STANDARD TERMS AND CONDITIONS - AWARDS UNDER THE DIRECT COMPONENT FOR ACQUISITION AND IMPROVEMENTS TO REAL PROPERTY

W ACQUISITION AND IMPROVEMENTS TO REAL PROPERTY

1. **Compliance with State, Local and Federal Requirements**

The project must comply with all applicable federal laws and regulations, and with all requirements for state, and local laws and ordinances to the extent that such requirements do not conflict with federal laws. The recipient is also responsible for supervising the design, bidding, construction, and operation of construction projects in compliance with all award requirements. The recipient must comply with, and must require all contractors and subcontractors, to comply with all federal, state, and local laws and regulations. The recipient must ensure compliance with special award conditions which may contain

conditions that must be satisfied prior to advertisement of bids, start of construction, or other critical event.

2. Title

Prior to receiving Treasury authorization to start construction, the recipient must furnish evidence, satisfactory to Treasury, that the recipient has acquired good and merchantable title free of all mortgages, foreclosable liens, or encumbrances, to all land, rights of way and easements necessary for the completion of the project.

3. Permitting Requirements

Prior to receiving Treasury authorization to start construction, the recipient must furnish evidence, satisfactory to Treasury, that recipient has received all federal, state and local permits necessary for the completion of the project.

4. Federal Interest in Real Property

“Federal interest” refers to real property that is acquired or improved, in whole or in part, with RESTORE Act Direct Component funds, which must be held in trust by the Recipient for the benefit of the project for the Estimated Useful Life of the project, during which period Treasury retains an undivided equitable reversionary interest in the real property (i.e., the “federal interest”).

5. Estimated Useful Life

Property that is acquired or improved, in whole or in part, with federal assistance is held in trust by the recipient for the purpose(s) for which the award was made for the Estimated Useful Life. Estimated Useful Life means the period of years that constitutes the expected useful lifespan of a project, as determined by Treasury, during which Treasury anticipates obtaining the benefits of the project pursuant to project purposes authorized by the RESTORE Act. For this award the recipient has proposed an Estimated Useful Life from the date of construction completion. Treasury’s issuance of the grant agreement represents its concurrence with the recipient’s proposed Estimated Useful Life.

The recipient’s obligation to the federal government continues for the Estimated Useful Life of the project, as determined by Treasury, during which Treasury retains an undivided equitable reversionary interest (the "federal interest”) in the property improved, in whole or in part, with the Treasury investment.

If Treasury determines that the recipient has failed or fails to meet its obligations under the terms and conditions of this award, Treasury may exercise its rights or remedies with respect to its federal interest in the project. However, Treasury’s forbearance in exercising any right or remedy in connection with the federal interest does not constitute a waiver thereof.

6. Commencement of Construction

The recipient should not commence construction prior to the date of the Award. The recipient must make a written request to Treasury for permission to commence construction after the construction contractor has been selected and at least 30 days prior to construction. For project costs to be eligible for Treasury reimbursement, Treasury must determine that the award of all contracts with associated costs are in compliance with the scope of the project and all terms and conditions of this award, and all necessary permits have been obtained, and the federal interest is secure. No construction funds may be drawn from ASAP without Treasury’s written permission. If the recipient commences construction prior to Treasury’s determination, the recipient proceeds at its own risk.

Treasury will only review contract amendments or change orders which change the scope of a contract.

7. Use of Real Property

Encumbering real property on which there is a federal interest without prior Treasury approval is an unauthorized use of the property and of project trust funds under this award. See 2 C.F.R. § 200.316. Real property or interest in real property may not be used for purposes other than the authorized purpose of the award without the express, prior written approval of Treasury, for as long as the federal government retains an interest in the property. The property must not be sold, conveyed, transferred, assigned, mortgaged, or in any other manner encumbered except as expressly authorized in writing by Treasury. The recipient must maintain facilities constructed or renovated with grant funds in a manner consistent with the purposes for which the funds were provided for the duration of the Estimated Useful Life.

In the event that the real property or interest in real property is no longer needed for the originally authorized purpose, the recipient must obtain disposition instructions from Treasury consistent with 2 C.F.R. § 200.311.

8. Recording the Federal Interest in the Real Property

To document the federal interest, the recipient agrees to prepare and properly record a “Covenant of Purpose, Use and Ownership” (Covenant), or, where a subrecipient is the title owner, to ensure that the subrecipient prepares and properly records a “Covenant of Purpose, Use and Ownership” (Covenant) on the property acquired or improved with federal assistance funds. See 2 C.F.R. § 200.316. This Covenant does not establish a traditional mortgage lien in that it does not establish a traditional creditor relationship requiring the periodic repayment of principal and interest, or the ability of Treasury to foreclose on the real property at any time. Rather, pursuant to the Covenant, the recipient and/or the subrecipient, as applicable, acknowledges that it holds title to the real property in trust for the public purposes of the financial assistance award and agrees, among other commitments, that it will repay the federal interest if it disposes of or alienates an interest in the real property, or uses it in a manner inconsistent with the public purposes of the award, during the Estimated Useful Life of the property.

a. The Covenant must be satisfactory in form and substance to Treasury, must include the name and current address of the recipient and subrecipient (if applicable), the grant award number, amount and date of award and subrecipient agreement (if applicable), date of the purchase of property (if applicable), and the Estimated Useful Life of the project. It must also include statements that the real property will only be used for purposes consistent with the RESTORE Act; that it will not be mortgaged or used as collateral, sold or otherwise transferred to another party, without the written permission of Treasury; and that the federal interest cannot be subordinated, diminished, nullified or released through encumbrance of the property, transfer of the property to another party or any other action the recipient/subrecipient takes without the written permission of Treasury.

b. The recipient agrees to provide to Treasury an attorney’s title opinion as to the title owner of the property, and to properly record, in accordance with applicable law, the Covenant in the real property records in the jurisdiction in which the real property is located in order to provide public record notice to interested parties that there are certain restrictions on the use and disposition of the real property during its Estimated Useful Life, and that Treasury retains an undivided equitable reversionary interest in the real property to the extent of its participation in the project for which funds have been awarded.

c. Treasury requires an opinion of counsel for the recipient to substantiate that the document has been properly recorded.

d. Failure to properly and timely file and maintain documentation of the federal interest may result in appropriate enforcement action, including, but not limited to, disallowance of the cost of the acquisition or improvement by Treasury.

e. The Federal Interest must be perfected and recorded/filed in accordance with state and/or local law concurrent with the acquisition of the real property, where an award includes real property acquisition, and

for construction of buildings and projects to improve the real property, no later than the date construction and/or improvement work commences.

f. When the Estimated Useful Life of the project is ended, the federal interest is extinguished and the federal government has no further interest in the real property.

Exclusions from the requirement that the federal interest on real property be recorded will be at Treasury's sole discretion. The types of projects for which Treasury may agree to this exclusion are those projects for which federal funds will not be used to fund the construction of built structures, improvements to state parks, water and sewer lateral line projects affecting private properties, and shoreline stabilization projects.

9. Administration, Operation and Maintenance

The recipient agrees to administer, operate, and maintain the project for its Estimated Useful Life in the same manner in which it operates and maintains similar facilities and equipment owned by it, and in accordance with state and local standards, laws and regulations. The recipient must not be in breach of its obligations under this award except to the extent the failure to fulfill any obligation is due to an Uncontrollable Force. "Uncontrollable Force" means an event beyond the reasonable control of, and without the fault or negligence of, the party claiming the Uncontrollable Force that prevents the recipient from honoring its contractual obligations under this Agreement and which, by exercise of the recipient's reasonable care, diligence and foresight, such recipient was unable to avoid. Uncontrollable Forces include, but are not limited to:

a. Strikes or work stoppage;

b. Floods, earthquakes, or other natural disasters; terrorist acts; and

c. Final orders or injunctions issued by a court or regulatory body having competent subject matter jurisdiction which the recipient, claiming the Uncontrollable Force, after diligent efforts, was unable to have stayed, suspended, or set aside pending review by a court of competent subject matter jurisdiction. Neither the unavailability of funds or financing, nor conditions of national or local economies or markets must be considered an Uncontrollable Force.

10. Reporting Requirement

The recipient must complete and submit to Treasury a report on the status of the real property or interest in real property in which the federal government retains an interest, using a *SF-429 Real Property Status Report* form annually for the first three years after real property acquisition or completion of construction, and thereafter every five years until the end of the Estimated Useful Life or time of disposition, whichever is less. All reports must be for the period ending December 31, or any portion thereof, beginning with the year of completion of construction or real property acquisition, and are due no later than 30 days following the end of the reporting period.

11. Insurance

The recipient must, at a minimum, provide the equivalent insurance coverage for real property improved with federal funds as provided to property owned by the recipient state, county or parish, in compliance with 2 C.F.R. § 200.310.

12. Bonding

For construction or facility improvement contracts or subcontracts exceeding the simplified acquisition threshold, the recipient or pass-through entity may request in writing that Treasury accept its bonding policy and requirements. If Treasury determines that the federal interest in the project is adequately protected, the recipient or pass-through entity need not comply with the following three bonding requirements. For all other recipients and pass-through entities, the minimum requirements for construction or facility improvement contracts or subcontracts exceeding the simplified acquisition threshold are as follows:

a. A bid guarantee from each bidder equivalent to five percent of the bid price. The “bid guarantee” must consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the bidder will, upon acceptance of the bid, execute such contractual instruments as may be required within the time specified.

b. A performance bond on the part of the contractor for 100 percent of the contract price. A “performance bond” is one executed in connection with a contract to secure fulfillment of all the contractor's obligations under such contract.

c. A payment bond on the part of the contractor for 100 percent of the contract price. A “payment bond” is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

13. Floodplain Requirements

In accordance with 44 C.F.R. Part 9, prior to Treasury’s authorization to commence construction in a designated 100-year floodplain, the recipient must provide evidence satisfactory to Treasury of a Floodplain Notice, that the 30-day period established for receipt of comments from the public in response to public notice published regarding the potential for adverse project impact on the values and functions of a designated 100-year floodplain has expired and that identified concerns (if any) have been addressed to Treasury’s satisfaction. This notice may be satisfied through a federal/state environmental assessment process used as the vehicle for public notice, involvement, and explanation per 44 C.F.R. § 9.8(2).

In addition, prior to Treasury’s authorization to commence construction of structures and/or buildings within a designated 100-year floodplain, the recipient must provide evidence satisfactory to Treasury of the following:

a. Floodplain Protection: That the project engineer/architect has certified that the project facility will be adequately protected from damage by floods in this area of apparent potential flood hazard. The evidence must include adequate justification for the Base Flood Elevation designation for the financial assistance award site.

b. Floodplain Insurance: That the community is participating in the National Flood Insurance Program, and that as required, the recipient will purchase flood insurance.

14. Goals for Women and Minorities in Construction

Department of Labor regulations set forth in 41 C.F.R. § 60-4 establish goals and timetables for participation of minorities and women in the construction industry. These regulations apply to all federally assisted construction contracts in excess of $10,000. The recipient must comply with these regulations and must obtain compliance with 41 C.F.R. § 60-4 from contractors and subcontractors employed in the completion of the project by including such notices, clauses and provisions in the Solicitations for Offers or Bids as required by 41 C.F.R. § 60-4.

a. The goal for participation of women in each trade area must be as follows: From April 1, 1981, until further notice: 6.9 percent;

b. All changes to this goal, as published in the Federal Register in accordance with the Office of Federal Contract Compliance Programs regulations at 41 C.F.R. § 60-4.6, or any successor regulations, must hereafter be incorporated by reference into these Special Award Conditions; and,

c. Goals for minority participation must be as prescribed by Appendix B-80, Federal Register, Volume 45, No. 194, October 3, 1980, or subsequent publications. The recipient must include the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" (or cause them to be included, if appropriate) in all federally assisted contracts and subcontracts. The goals and timetables for minority and female participation may not be less than those published pursuant to 41 C.F.R. § 60-4.6.

15. Davis Bacon Act, as amended (40 U.S.C. §§ 3141–3148)

Davis-Bacon Act-related provisions are applicable for a construction project if it is for the construction of a project that can be defined as a "treatment works" in 33 U.S.C § 1292; or for a construction project regardless of whether it is a "treatment works" project if it is receiving federal assistance from another federal agency operating under an authority that requires the enforcement of Davis-Bacon Act-related provisions. When required, all prime construction contracts in excess of $2,000 awarded by the non-Federal entity must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. §§ 3141–3144, and §§ 3146–3148) as supplemented by Department of Labor regulations (29 C.F.R. Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition contracts must be required to pay wages not less than once a week.

The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to Treasury. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (40 U.S.C. § 3145), as supplemented by Department of Labor regulations (29 C.F.R. Part 3, "Contracts and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation or which he or she is otherwise entitled. The non-federal entity must report all suspected or reported violations to Treasury.

16. Equal Opportunity Clause

Pursuant to 41 C.F.R. § 60-1.4(b), Federally assisted construction contracts, for construction which is not exempt from the requirements of the equal opportunity clause, 41 C.F.R. Part 60-1—Obligations of Contractors and Subcontractors, [t]he [recipient] hereby agrees that it will incorporate or cause to be incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 C.F.R. Chapter 60, which is paid for in whole or in part with funds obtained from the federal government or borrowed on the credit of the federal government pursuant to a grant, contract, loan, insurance, or guarantee, or undertaken pursuant to any federal program involving such grant, contract, loan, insurance, or guarantee, the following equal opportunity clause:

41 C.F.R. § 60-1.4 Equal opportunity clause.

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:

Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by

rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: Provided, That if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with

a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

17. Revised ADA Standards for Accessible Design for Construction Awards

The U.S. Department of Justice has issued revised regulations implementing Title II of the ADA (28 C.F.R. Part 35) and Title III of the ADA (28 C.F.R. Part 36). The revised regulations adopted new enforceable accessibility standards called the “2010 ADA Standards for Accessible Design” (2010 Standards). The 2010 Standards are an acceptable alternative to the Uniform Federal Accessibility Standards (UFAS). Treasury deems compliance with the 2010 Standards to be an acceptable means of complying with the Section 504 accessibility requirements for new construction and alteration projects. All new construction and alteration projects must comply with the 2010 Standards.

ADCNR SUBAWARD GRANT AGREEMENT

STATE OF ALABAMA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
64 NORTH UNION STREET
MONTGOMERY, ALABAMA 36130

KAY IVEY
GOVERNOR

CHRISTOPHER M. BLANKENSHIP
COMMISSIONER

EDWARD F. POOLOS
DEPUTY COMMISSIONER

LEGAL SECTION

CHARLANNA W. SKAGGS
GENERAL COUNSEL

JENNIFER WEBER
DEPUTY GENERAL
COUNSEL

JULIANA T. DEAN
DEPUTY GENERAL
COUNSEL

RYAN CORLEY
ASSOCIATE COUNSEL

PHONE: 334/242-3165
FAX: 334/242-3167

March 20, 2023

MEMORANDUM

TO: Amy Hunter
DWH Restoration Coordinator

FROM: Juliana T. Dean
Deputy General Counsel

RE: Fully Executed
Amendment No. 2-Subaward Grant Agreement
City of Mobile
#M1A11-HAWC - Africatown Welcome Center: Phase I and II

Please find attached a fully executed original of the above referenced agreement. We have retained a copy for our files and forwarded a copy to the Accounting Section.

JTD:hb

Attachment

cc: Accounting

The Department of Conservation and Natural Resources does not discriminate on the basis of race, color, religion, age, sex, pregnancy, national origin, genetic information, veteran status, or disability in its hiring or employment practices nor in admission to, access to, or operations of its programs, services, or activities.

STATE OF ALABAMA

ADCNR Grant #: M1A11-HAWC

MONTGOMERY COUNTY

SUBAWARD GRANT AGREEMENT – AMENDMENT NO. 2

THIS SUBAWARD GRANT AGREEMENT, ("Agreement") is made and entered into by and between the State of Alabama Department of Conservation and Natural Resources (hereinafter "ADCNR") and the City of Mobile (hereinafter "Subrecipient"). Pursuant to this Agreement, ADCNR and Subrecipient (collectively hereinafter "Parties") agree as follows:

PROJECT PURPOSE AND IDENTITY: The purpose of this Agreement is to provide funding under the Resources and Ecosystem Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act of 2012 (hereinafter "RESTORE Act") to Subrecipient for implementation of the RESTORE Act Direct Component project titled "Africatown Welcome Center: Phase I and Phase II" (hereinafter "Project"). The purpose of this project is to develop a comprehensive plan which includes a marketing and outreach strategy for creation of a tourism program to promote the area (Phase I) and design and build a Welcome Center to showcase the historic Africatown heritage and culture (Phase II), further described in the Federal Award RDCGR010111-01-02. This Agreement between the Parties will be identified by the "ADCNR Grant Number" set forth above in the upper right corner of this Agreement. All invoices and other correspondence submitted to ADCNR in connection with this Agreement must be identified by said Grant Number.

This AMENDMENT No. 2 is for an existing grant for the Alabama Department of Conservation and Natural Resources (ADCNR), Grant No. RDCGR010111-01-02, Africatown Welcome Center: Phase I and Phase II Amendment No. 2. This amendment executes the following suite of actions:

1. Adds $5,838,698.00 in Direct Component funds for ADCNR and its subrecipient;
2. Increases the Scope of Work to include Phase II (Construction);
3. Amends the Milestones and Measures in the Scope of Work; and
4. Extends the Period of Performance to 60 months (through April 30, 2025).

1. FEDERAL AWARD INFORMATION: The Project's Financial Assistance Award (hereinafter "Federal Award") in its entirety is hereby incorporated into this Agreement by reference. Information as to the Federal Award associated with the Project includes the following:
    a. Federal Award Identification Number (FAIN): RDCGR010111
    b. Federal Award Period of Performance: 05/01/2020 to 04/30/2025
    c. Total Amount of Federal Funds Obligated To Subrecipient: $6,224,073.00
    d. Subrecipient UEI#: QV8KPHH9J8A3
    e. Total Amount of Federal Award: $6,375,969.00
    f. Name of Federal Awarding Agency: U.S. Department of Treasury, Office of Gulf Coast Restoration (hereinafter "Treasury")
    g. Pass-Through Entity & Awarding Official Contact Information:
        Alabama Department of Conservation and Natural Resources
        Commissioner Christopher M. Blankenship
        64 N. Union Street; Suite 468
        Montgomery, AL 36130
    h. CFDA Number & Name: CFDA# 21.015 "Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf States"
    i. Indirect Cost Rate of Subrecipient: 0%

2. AGREEMENT FUNDING AMOUNT: ADCNR's funding commitment under this Agreement shall be within the budgetary limits as described herein and pursuant to the Federal Award and shall not exceed a total of six million two hundred twenty-four thousand seventy-three and xx/100 dollars ($6,224,073.00).

3. PROJECT PERIOD: The period allowed for Project completion by the Subrecipient (hereinafter "Project Period") shall commence on the May 1, 2020 and end on April 30, 2025.

4. AGREEMENT TERM: The term of this Agreement shall commence when the Agreement is executed by both Parties and end on April 30, 2025 (hereinafter "Agreement Term").

5. CLOSEOUT PROCEDURES: The closeout process is final reconciliation and reporting of program expenses and activities. This involves reviewing program expenditures and completion of deliverables, resolving any open commitments, collecting subrecipient documents, and submitting the required final reports adhering to the schedule developed by ADCNR.

6. NOTICE: Contact information of Parties for purposes of providing notice pursuant to the terms of this Agreement are set forth below. In the event the designation of new contact information is necessary, such shall not require a formal amendment to this Agreement.

To ADCNR:

Alabama Department of Conservation and Natural Resources
Attn: Christopher M. Blankenship, Commissioner
64 N. Union St., Suite 468
Montgomery, AL 36130

With a copy to:

Dr. Amy Hunter
Deepwater Horizon Restoration Coordinator
Alabama Department of Conservation and Natural Resources
31115 Five Rivers Boulevard
Spanish Fort, AL 36527
Email: amy.hunter@dcnr.alabama.gov

To Subrecipient:

William S. Stimpson, City of Mobile – Mayor
P.O. Box 1827
Mobile, Alabama 36633

Cassie Boatwright, Director, Real Estate Asset Management
P.O. Box 1827
Mobile, Alabama 36633
251-208-1558
boatwright@cityofmobile.org

7. PARTIES REPRESENT THAT THIS AGREEMENT SUPERSEDES ALL PROPOSALS, ORAL AND WRITTEN, ALL PREVIOUS CONTRACTS, AGREEMENTS, NEGOTIATIONS AND ALL OTHER COMMUNICATIONS BETWEEN THE PARTIES WITH RESPECT TO THE SUBJECT MATTER HEREOF.

8. DOCUMENTS: The documents which comprise this Agreement between ADCNR and the Subrecipient are:
   1. This Subaward Agreement;

2. The Amendment for the existing grant for the Alabama Department of Conservation and Natural Resources (ADCNR), Grant No. RDCGR010111-01-02 and any U.S. Department of Treasury's Restore Act Financial Assistance Standard Terms and Conditions and Program-Specific Terms and Conditions and Special Award Conditions.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their respective officers thereunto duly authorized as of the date entered below.

STATE OF ALABAMA
DEPARTMENT OF CONSERVATION
AND NATURAL RESOURCES

Christopher M. Blankenship, Commissioner

Date: 3-20-23

APPROVED LEGAL

CITY OF MOBILE

William S. Stimpson
2023.03.15 12:11:39
-05'00'

William S. Stimpson, Mayor

Date: _____

CITY OF MOBILE – ATTEST

Lisa C. Lambert, City Clerk

Date: 3/15/2023

Reviewed By Accounting

DCNR Accounting Director

AL-01/12/2023
Subrecipient Name: ***CITY OF MOBILE, UEI: QV8KPHH9J8A3***
Title of Grant Project: ***AFRICATOWN WELCOME CENTER: PHASE I AND PHASE II***

Attachment 1
Federal Award Identification

The entity identified in this agreement is a subrecipient of a subaward, in accordance with 2 CFR 200.332. Be advised, the following information describes the Federal award and subaward:

(1) Federal Award Identification		
(i.)	Subrecipient name	City of Mobile
(ii.)	Subrecipient's unique entity identifier	UEI: QV8KPHH9J8A3
(iii.)	Federal Award Identification Number (FAIN);	RDCGR010111
(iv.)	Federal Award Date (see §200.39 Federal award date) of award to the recipient by the Federal agency;	01/12/2023
(v.)	Subaward Period of Performance Start and End Date;	When the Agreement is executed by both Parties and end on April 30, 2025.
(vi.)	Amount of Federal Funds Obligated by this action by the pass-through entity to the subrecipient;	$6,224,073.00
(vii.)	Total Amount of Federal Funds Obligated to the subrecipient by the pass-through entity including the current obligation;	$6,224,073.00
(viii.)	Total Amount of the Federal Award committed to the subrecipient by the pass-through entity;	$6,224,073.00
(ix.)	Federal award project description, as required to be responsive to the Federal Funding Accountability and Transparency Act (FFATA);	The purpose of this project is to develop a comprehensive plan which includes a marketing and outreach strategy for creation of a tourism program to promote the area (Phase I) and design and build a Welcome Center to showcase the historic Africatown heritage and culture (Phase II).
(x.)	Name of Federal awarding agency, Name of pass-through entity, and contact information for awarding official of the pass-through entity	U.S. Department of Treasury, Alabama Department of Conservation and Natural Resources, Christopher M. Blankenship Chris.blankenship@dcnr.alabama.gov
(xi.)	CFDA Number and Name; the pass-through entity must identify the dollar amount made available under each Federal award and the CFDA number at time of dishursement;	CFDA # 21.015 Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States - total Federal Award issued to ADCNR, which is registered in SAM with the UEI: WLNMNKHKF5T1, is $6,375,969.00.
(xii.)	Identification of whether the award is R&D; and	This is not a R&D award.
(xiii.)	Indirect cost rate for the Federal award (including if the de minimis rate is charged per §200.414 Indirect (F&A) costs).	The indirect cost rate for 22.12%. The de minimis rate is not charged.

APPENDIX II TO 2 CFR PART 200: CONTRACT PROVISIONS FOR NON-FEDERAL ENTITY CONTRACTS UNDER FEDERAL AWARDS

In addition to other provisions required by the Federal agency or non-Federal entity, all contracts made by the non-Federal entity under the Federal award must contain provisions covering the following, as applicable.

(A) Contracts for more than the simplified acquisition threshold, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate.

(B) All contracts in excess of $10,000 must address termination for cause and for convenience by the non-Federal entity including the manner by which it will be effected and the basis for settlement.

(C) Equal Employment Opportunity. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of "federally assisted construction contract" in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

(D) Davis-Bacon Act, as amended (40 USC 3141-3148). When required by Federal program legislation, all prime construction contracts in excess of $2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (40 USC. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (40 USC. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.

(E) Contract Work Hours and Safety Standards Act (40 USC 3701-3708). Where applicable, all contracts awarded by the non-Federal entity in excess of $100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 USC 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 USC 3702 of

the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 USC 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

(F) Rights to Inventions Made Under a Contract or Agreement. If the Federal award meets the definition of "funding agreement" under 37 CFR §401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the recipient or subrecipient must comply with the requirements of 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

(G) Clean Air Act (42 USC 7401-7671q.) and the Federal Water Pollution Control Act (33 USC 1251-1387), as amended—Contracts and subgrants of amounts in excess of $150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 USC 7401-7671q) and the Federal Water Pollution Control Act as amended (33 USC 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

(H) Debarment and Suspension (Executive Orders 12549 and 12689)—A contract award (see 2 CFR 180.220) must not be made to parties listed on the governmentwide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension." SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

(I) Byrd Anti-Lobbying Amendment (31 USC 1352)—Contractors that apply or bid for an award exceeding $100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 USC 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

(J) See §200.323.

(K) See §200.216.

(L) See §200.322.

PROCUREMENT OF RECOVERED MATERIALS

The prime contractor must comply with federal regulations regarding procurement of recovered materials found at 2 CFR §200.323.

2 CFR §200.323 requires the Project Owner and its contractors to comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR Part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired during the preceding fiscal year exceeded $10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

The following summary of products designated by 40 CFR Part 247 has been provided to assist in contractor compliance; however, compliance is the contractor's sole responsibility. Note that this listing is not all inclusive and one or more products may or may not be applicable to this scope of work for this construction contract. Contractors should refer to 40 CFR Part 247 for additional information.

<u>40 CFR §247.12 designates the following Construction Products:</u>

(a) Building insulation products, including the following items:

(1) Loose-fill insulation, including but not limited to cellulose fiber, mineral fibers (fiberglass and rock wool), vermiculite, and perlite;

(2) Blanket and batt insulation, including but not limited to mineral fibers (fiberglass and rock wool);

(3) Board (sheathing, roof decking, wall panel) insulation, including but not limited to structural fiberboard and laminated paperboard products, perlite composite board, polyurethane, polyisocyanurate, polystyrene, phenolics, and composites; and

(4) Spray-in-place insulation, including but not limited to foam-in-place polyurethane and polyisocyanurate, and spray-on cellulose.

(b) Structural fiberboard and laminated paperboard products for applications other than building insulation, including building board, sheathing, shingle backer, sound deadening board, roof insulating board, insulating wallboard, acoustical and non-acoustical ceiling tile, acoustical and non-acoustical lay-in panels, floor underlayments, and roof overlay (coverboard).

(c) Cement and concrete, including concrete products such as pipe and block containing:

(1) Coal fly ash;

(2) Ground granulated blast furnace slag (GGBF);

(3) Cenospheres; or

(4) Silica fume from silicon and ferrosilicon metal production.

(d) Carpet made from polyester fiber made from recovered materials for use in moderate-wear applications such as single-family housing and similar wear applications.

(e) Floor tiles and patio blocks containing recovered rubber or plastic.

(f) Shower and restroom dividers/partitions containing recovered plastic or steel.

(g) (1) Consolidated latex paint used for covering graffiti; and

(2) Reprocessed latex paint used for interior and exterior architectural applications such as wallboard, ceilings, and trim; gutter boards; and concrete, stucco, masonry, wood, and metal surfaces.

(h) Carpet cushion made from bonded polyurethane, jute, synthetic fibers, or rubber containing recovered materials.

(i) Flowable fill containing coal fly ash and/or ferrous foundry sands.

(j) Railroad grade crossing surfaces made from cement and concrete containing fly ash, recovered rubber, recovered steel, recovered wood, or recovered plastic.

(k) Modular threshold ramps containing recovered steel, rubber, or aluminum.

(l) Nonpressure pipe containing recovered steel, plastic, or cement.

(m) Roofing materials containing recovered steel, aluminum, fiber, rubber, plastic or plastic composites, or cement.

40 CFR §247.13 designates the following Transportation Products:

(a) Traffic barricades and traffic cones used in controlling or restricting vehicular traffic.

(b) Parking stops made from concrete or containing recovered plastic or rubber.

(c) Channelizers containing recovered plastic or rubber.

(d) Delineators containing recovered plastic, rubber, or steel.

(e) Flexible delineators containing recovered plastic.

40 CFR §247.14 designates the following Park and Recreation Products:

(a) Playground surfaces and running tracks containing recovered rubber or plastic.

(b) Plastic fencing containing recovered plastic for use in controlling snow or sand drifting and as a warning/safety barrier in construction or other applications.

(c) Park benches and picnic tables containing recovered steel, aluminum, plastic, or concrete.

(d) Playground equipment containing recovered plastic, steel, or aluminum.

40 CFR §247.15 designates the following Landscaping Products:

(a) Hydraulic mulch products containing recovered paper or recovered wood used for hydroseeding and as an over-spray for straw mulch in landscaping, erosion control, and soil reclamation.

(b) Compost made from recovered organic materials.

(c) Garden and soaker hoses containing recovered plastic or rubber.

(d) Lawn and garden edging containing recovered plastic or rubber.

(e) Plastic lumber landscaping timbers and posts containing recovered materials.

(f) Fertilizer made from recovered organic materials.

PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OF EQUIPMENT

The prime contractor must comply with federal regulations regarding prohibition on certain telecommunications and video surveillance services or equipment found at 2 CFR §200.216, which states:

(a) Recipients and subrecipients are prohibited from obligating or expending loan or grant funds to:

(1) Procure or obtain;

(2) Extend or renew a contract to procure or obtain; or

(3) Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115-232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

(i) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

(ii) Telecommunications or video surveillance services provided by such entities or using such equipment.

(iii) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

(b) In implementing the prohibition under Public Law 115-232, section 889, subsection (f), paragraph (1), heads of executive agencies administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.

(c) See Public Law 115-232, section 889 for additional information.

(d) See also §200.471.

DOMESTIC PREFERENCES FOR PROCUREMENTS

The prime contractor must, to the greatest extent practicable, provide a preference for the purchase, acquisition, or use of goods, products, or material produced in the United States (including, but not limited to, iron, aluminum, steel, cement and other manufactured products).

Additional information about federal regulations regarding domestic preferences for procurements can be found at 2 CFR §200.322, which states:

> (a) As appropriate and to the extent consistent with law, the non-Federal entity should, to the greatest extent practicable under a Federal award, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for work or products under this award.
>
> (b) For purposes of this section:
>
> > (1) ‘‘Produced in the United States’’ means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.
> >
> > (2) ‘‘Manufactured products’’ means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

The requirements of this section must be included in all contracts and subcontracts for work or products under this award pursuant to 2 CFR § 200.322 and Executive Order 14005 Ensuring the Future is Made in All of America by All of America’s Workers (January 25, 2021).

CONTRACTING WITH SMALL AND MINORITY BUSINESSES, WOMEN'S BUSINESS ENTERPRISES, AND LABOR SURPLUS AREA FIRMS

Documentation of compliance with the following requirements is a matter of contractor responsibility. When subcontracting, the contractor must submit documentation of good faith efforts to meet the project's MBE/WBE requirements before contracted work can commence. (MBE/WBE requirements are outlined below and can be found at 2. C. F. R. §200.321.) Failure on the part of the contractor to submit proper documentation may cause the Owner not to execute or to terminate the contract.

(a) The prime contractor must take all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible.

(b) Affirmative steps must include:

(1) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

(2) Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;

(3) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;

(4) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises; and,

(5) Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce.

The prime contractor should note that this requirement mandates two responsibilities. Separate solicitations must be made of minority **and** women's business enterprises.

SUBMITTAL OF MINORITY BUSINESS ENTERPRISE AND WOMEN'S BUSINESS ENTERPRISE (MBE/WBE) DOCUMENTATION

Before the Notice of Award can be issued, the lowest responsive and responsible bidder will be required to submit either:

- A written certification that no subcontracts will be issued.

  - OR -

- The Subcontractor Listing Form detailing all subcontractors that will perform work on the project, including name, contact person, address, phone, and status (MBE, WBE or Non).

If subcontractors will be utilized, the lowest responsive and responsible bidder will be required to submit the following for subcontracts proposed to be awarded to MBE/WBE enterprises:

- A certification from each MBE and/or WBE firm declaring its status as a MBE or WBE firm. This can be an SBA [OR OTHER STATE AGENCY] certification. A self-certification is acceptable, if the certification specifies the basis for MBE/WBE designation (e.g., the business is 51% owned and daily operation is controlled by one or more women or minority owners).

If subcontractors will be utilized, the lowest responsive and responsible bidder will be required to submit the following for subcontracts proposed to be awarded to Non-MBE/WBE:

- For all subcontracts for which there are capable certified MBE/WBE firms existing to potentially perform the work, letters transmitted to MBE and WBE firms requesting quotes or proposals for specific subcontracting opportunities, for construction, equipment, materials, or supply needs and encouraging inquiries for further details. Solicitations should have been sent in a timely manner, including allowed response time. (See "Sample Letter from Contractor to MBE/WBE Firms" below.)

- A listing of certified MBE and WBE firms from whom quotes or proposals were received, if any, who were not awarded subcontracts, for construction, equipment, materials or supplies.

- Evidence that each Non-MBE/WBE subcontractor or supplier selected for the scope of work or material purchase, was lower in price than each MBE/WBE proposal (or that there is some other acceptable reason to select the Non-MBE/WBE) and that the scope of work, or material purchase, was the same for both the MBE/WBE and Non-MBE/WBE.

The following are points of contact to send the advertisements, RFQ package and/or construction bid package for MBE/WBE outreach. Contact can be by sending hard copy documents, but make sure to require a signature and maintain documentation of receipt. Contact can also be made by email, but make sure to obtain an email response confirming receipt of the message.

1. Alabama Department of Economic and Community Affairs (ADECA)
Attn: Mr. Scott Stewart
Office of Minority Business Enterprise
P.O. Box 5690
Montgomery, AL 36103-5690
Scott.Stewart@adeca.alabama.gov

2. Alabama Small Business Development Center Network
Attn: Mr. Brian Davis
The University of Alabama
P.O. Box 870386
Tuscaloosa, AL 35487=0396
(205)348-7621

3. Alabama Small Business Development Center
Attn: Louise Grover

1500 1st Avenue North, Unit 62
Birmingham, AL 35203

Should the Prime Contractor intend to later issue a subcontract, the above affirmative steps must be followed and documentation of such submitted to the Owner for review as described under this section.

SAMPLE LETTER FROM CONTRACTOR TO MBE/WBE FIRMS

(CONTRACTOR'S LETTERHEAD)

[DATE]

[MBE/WBE COMPANY NAME]
[ADDRESS]
[CITY, STATE ZIP]

RE: [NAME OF PROJECT]

Dear [MBE/WBE FIRM]:

This company intends to submit a bid on the above referenced project.

We are soliciting a proposal from you for any item or items on this project for which you are qualified to subcontract. You may submit proposals to subcontract items of construction or for project materials and supplies if you are a distributor of materials or equipment.

A [BID SCHEDULE OR DESCRIPTION OF THE SPECIFIC ITEM TO BID] is attached for your review. You are encouraged to submit proposals on any item(s) for which you are qualified to subcontract. Proposals must be submitted by [SUBMITTAL DEADLINE] to be considered.

For further details, you are encouraged to contact [NAME OF OWNER REPRESENTATIVE] by email at [EMAIL ADDRESS] or by telephone at [TELEPHONE NUMBER] during normal business hours.

Sincerely,

[NAME OF REPRESENTATIVE]
[NAME OF COMPANY]

Enclosure: [BID SCHEDULE OR DESCRIPTION OF THE SPECIFIC ITEM TO BID]

41 CFR §60-1.4(b) EQUAL OPPORTUNITY CLAUSE

(for Federally Assisted Construction Contracts)

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:

> Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

The recipient further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: Provided, that if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

The recipient agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The recipient further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

41 CFR §60-4.2(d) NOTICE OF REQUIREMENT FOR AFFIMRATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (Executive Order 11246)

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Time-tables	**Covered Area** (Geographical area where the contract is to be performed)	**Goals for minority participation for each trade**	**Goals for female participation in each trade**
Until Further Notice	Baldwin County, AL	25.9 %	6.9% for all Covered Areas
	Mobile County, AL	25.9 %	

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is the Alabama County within the Gulf Coast Region where the contract will be performed.

41 CFR §60-4.3(a) STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (Executive Order 11246)

1. As used in these specifications:

a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;

b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;

c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

d. "Minority" includes:

(i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

(ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);

(iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

(iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7 a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and

training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, sexual orientation, gender identity, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

SUBCONTRACTOR LISTING FORM *(v.09.30.2023)*

The prime contractor must submit this form to the Owner prior to contract execution and must update it for each subcontractor performing any work resulting from this contract. If additional lines are needed, this form may be duplicated.

Subcontractor Name and Contact Person	Subcontractor Address and Phone Number	Subcontractor Active UEI	MBE (Y/N)	WBE (Y/N)	On Site during this period (Y/N)

COMPLETED BY: _____ **DATE:** _____

3/8/2024 11:44:19 AM

PROJECT NO. CL-036-21

AFRICATOWN WELCOME CENTER

City of Mobile

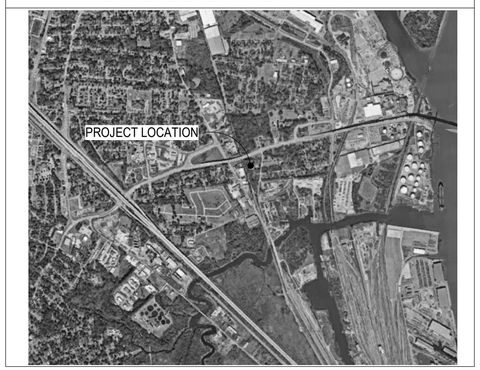
1959 Bay Bridge Road Cutoff
Mobile, AL 36610



VICINITY MAP



SITE LOCATION MAP



CONSULTANTS

STRUCTURAL,ELECTRICAL, MECHANICAL, & PLUMBING ENGINEER:

MOTT MACDONALD
220 West Garden Street, Suite 700
Pensacola, FL 32502
850.484.6011

CIVIL ENGINEER:

SARCOR, LLC
215 19th St. N, Suite 101
Birmingham, AL. 35205
205.227.8733

LANDSCAPE ARCHITECT

CPLA
307 De La Mare Avenue
Fairhope, AL 36532
855.539.5086

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Mott MacDonald Architects, Inc.
Architects
Engineers
Surveyors
MOTT MACDONALD

AFRICATOWN WELCOME CENTER
City of Mobile
1959 Bay Bridge Road Cutoff
Mobile, AL. 36610

REVISIONS DESCRIPTION
30% Submission
90% Submission
100% Submission

DATE	REV
07/17/2023	A
10/02/2023	B
10/27/2023	C

DATE: 10/27/2023
DESIGNED BY: A. Marasca
DRAWN BY: OG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P. MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE
COVER SHEET

SHEET NUMBER.
G001

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ABBREVIATIONS

THIS LIST IS NOT ALL INCLUSVE

A.F.F.	ABOVE FINISHED FLOOR
A.C.T.	ACOUSTICAL TILE
ADJ	ADJACENT
ADJT	ADJUSTABLE
ALT	ALTERNATE
ALUM	ALUMINUM
ANOD	ANODIZED
BRG	BEARING
B.M.	BENCH MARK
BLKG	BLOCKING
BD	BOARD
BTM	BOTTOM
CIP	CAST IN PLACE
CLG	CEILING
CLOS	CLOSET
CO	CLEAN OUT
CLR	CLEAR
COL	COLUMN
CONC	CONCRETE
CMU	CONCRETE MASONRY UNIT
CONT	CONTINUOUS
CJ	CONTROL JOINT
CG	CORNER GUARD
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
DTL	DETAIL
DIAG	DIAGONAL
DIA	DIAMETER
DIM	DIMENSION
D.S.	DOWNSPOUT
D	DRAIN
D.F.	DRINKING FOUNTAIN
EP	ELECTRICAL PANELBOARD
EWC	ELECTRIC WATER COOLER
EL	ELEVATION
EQ	EQUAL
EF	EXHAUST FAN
EXIST	EXISTING
E.J.	EXPANSION JOINT
F.V.	FIELD VERIFY
F.O.C.	FACE OF CONCRETE
F.O.F.	FACE OF FINISH
F.O.M.	FACE OF MASONRY
F.O.S.	FACE OF STUD
F.O.W.	FACE OF WALL
FIN	FINISH
FIN. FLR.	FINISH FLOOR
F.E.C.	FIRE EXTINGUISHER CABINET
FA	FIRE ALARM
FH	FIRE HYDRANT
FL	FLOOR
FTG	FOOTING
FDN	FOUNDATION
FD	FLOOR DRAIN
GA	GAUGE
GALV	GALVANIZED
GWB	GYPSUM WALLBOARD
GYP	GYPSUM
HC	HANDICAP
HDW	HARDWARE
HVAC	HEATING / VENTILATION / AC
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HB	HOSE BIBB
HR	HOUR
INSUL	INSULATION
IN	INCH
INT	INTERIOR
MFR	MANUFACTURER
M.O.	MASONRY OPENING
MAT	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MTL	METAL
MIN	MINIMUM
MISC	MISCELLANEOUS
MTD	MOUNTED
MUL	MULLION
NOM	NOMINAL
N	NORTH
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
NO	NUMBER
O.C.	ON CENTER
OPNG	OPENING
OD	OUTSIDE DIAMETER
OPP.	HAND OPPOSITE HAND
O.H.	OVER HEAD
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED OWNER INSTALLED
P. LAM	PLASTIC LAMINATE
PART.	PARTITION
PC	PRECAST CONCRETE
PL	PLATE
PLYWD	PLYWOOD
PIP	POURED IN PLACE
PREFAB	PREFABRICATED
PTC	POST TENSIONED CONCRETE
P.T.	PRESSURE TREATED
PVC	POLYVINYL CHLORIDE
RAD.	RADIUS
REQ.	REQUIRED
R.D.	ROOF DRAIN
R.O.	ROUGH OPENING
R.O.W.	RIGHT OF WAY
RM	ROOM
REF	REFERENCE
REV.	REVISION
SCHED	SCHEDULE
SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SK	SKYLIGHT
SPKR	SPEAKER
SPEC	SPECIFICATIONS
S.S.	STAINLESS STEEL
STD	STANDARD
STA	STATION
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
SUSP CL	SUSPENDED CEILING
S.F.	SQUARE FEET
TEL	TELEPHONE
THK	THICK
T&G	TONGUE AND GROOVE
T/B	TOP AND BOTTOM
T.O.C.	TOP OF CONCRETE
T.O.M.	TOP OF MASONRY
T.O.S.	TOP OF STEEL
T.O.W.	TOP OF WALL
TYP	TYPICAL
U.N.O.	UNLESS OTHERWISE NOTED
UL	UNDERWRITERS LABORATORIES
VB	VAPOR BARRIER
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VTR	VENT THROUGH ROOF
WH	WALL HYDRANT
WC	WATER CLOSET
WP	WATERPROOFING
WT	WEIGHT
WWF	WELDED WIRE FABRIC
WIN	WINDOW
W/	WITH
W/O	WITHOUT
WD	WOOD

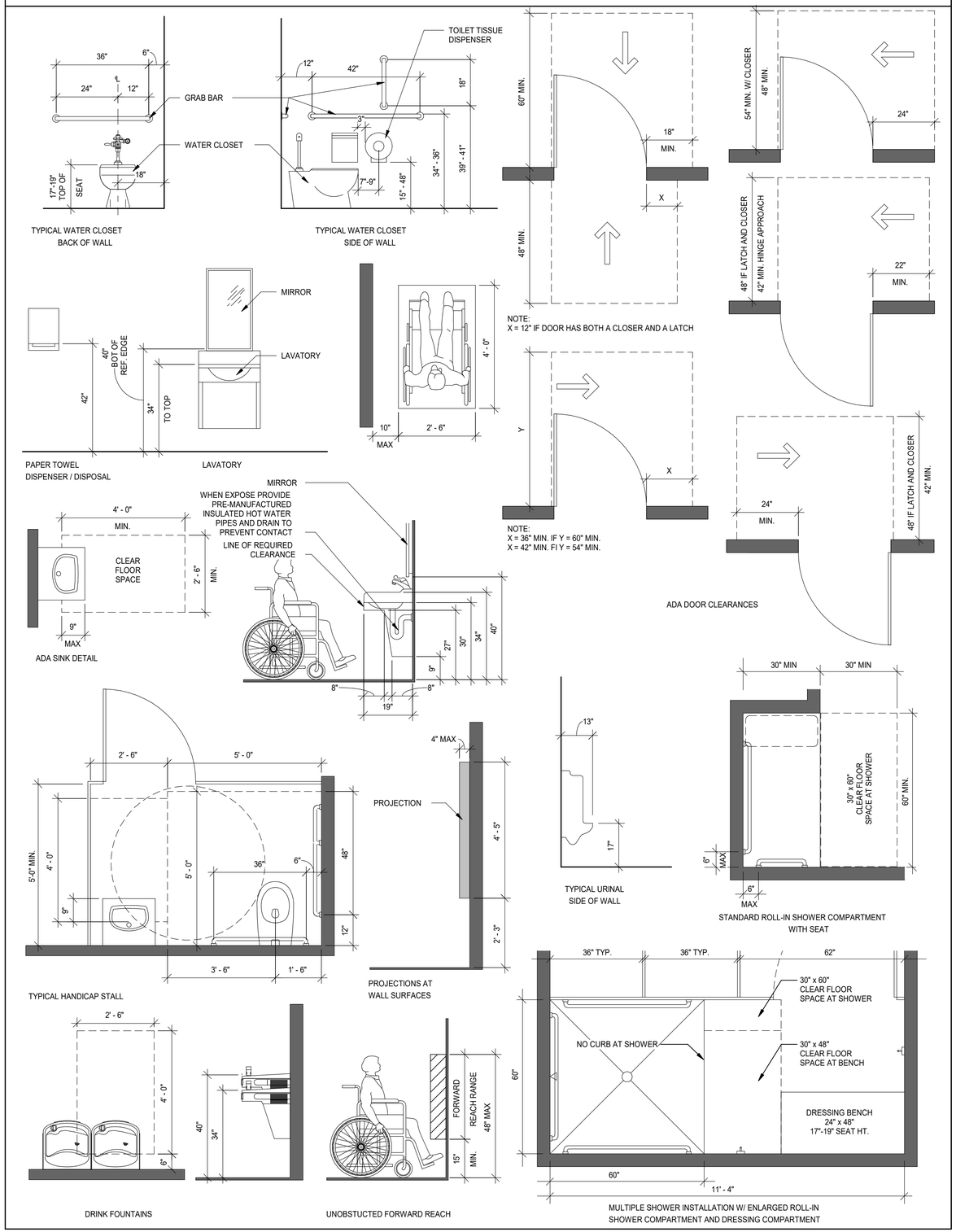
MATERIALS LEGEND

- SELECT COMPACT FILL
- POROUS / STONE / ROCK FILL
- CONCRETE
- PLASTER, GROUT, STUCCO FINISH
- MASONRY VENEER, GENERAL HATCHING
- CONCRETE BLOCK
- PLYWOOD SHEATHING
- ROUGH WOOD
- FINISH WOOD
- INSULATION
- METAL
- RIGID INSULATION

SYMBOLS LEGEND

- NORTH ARROWS — TRUE NORTH / PROJECT NORTH
- EXTERIOR ELEVATION — SHEET NO. / DETAIL NO.
- INTERIOR ELEVATION — SHEET NO. / DETAIL NO. TYP.
- SECTION — DETAIL NO. TYP. / SHEET NO. / SIM
- DOOR SYMBOL — 101
- WINDOW / LOUVER SYMBOL — 2
- ROOM TAG — Room name 101
- KEYNOTE TAG — 01 01 01.1
- SPOT ELEVATION
- DETAIL CALLOUT / ENLARGED PLAN — DETAIL NO. TYP. / SHEET NO. / SIM
- COLUMN CENTERLINE — 0
- PARTITION TYPE — 1i
- REVISION / ADDENDA TAG — 2

ADA STANDARDS



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MOTT MACDONALD

AFRICATOWN WELCOME CENTER

City of Mobile

1959 Bay Bridge Road Cutoff
Mobile, AL. 36610

REVISIONS DESCRIPTION

REV	DATE	
A	07/17/2023	30% Submission
B	10/02/2023	90% Submission
C	10/27/2023	100% Submission

DATE: 10/27/2023
DESIGNED BY: A. Marasca
DRAWN BY: QG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P. MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE

LEGENDS AND ABBREV.

SHEET NUMBER.

G002

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BUILDING CODE SUMMARY

2. LEAD DESIGN PROFESSIONAL Mott MacDonald – Andrew P Marasca

Designer	Name	License #	Phone #
Architectural	Mott MacDonald - Andrew Marasca	6996	251-406-8245
Civil	Sarcor - Jeff Havencroft	19047	251-287-9419
Electrical	Mott MacDonald - Andrew Gibbs	25105	251-316-0015
Fire Alarm	Mott MacDonald - Andrew Gibbs	25105	251-461-6397
Plumbing	Mott MacDonald - John Gibbs	24744	251-461-6397
Mechanical	Mott MacDonald - John Gibbs	24744	251-316-0015
Sprinkler-Standpipe	NA		
Structural	Mott MacDonald - Chad Lyner	28305	850-602-9765

1. GENERAL INFORMATION

Name of Project Africatown Welcome Center

Project Address 1959 Bay Bridge Road Cutoff, Mobile AL. 36610

Proposed Use Assembly (IBC)

Architects/Engineers letter of Supervision Provided? ___ Yes ___No

1. 1 Codes used in design (Check all that apply)

X	2021 International Building Code	X	2020 National Electrical Code
X	2021 International Existing Building Code	X	2021 International Mechanical Code
X	2021 International Fire Code	X	2021 International Plumbing Code
X	2015 International Energy Conservation Code	X	2021 International Fuel Gas Code

1.2 Construction Description

___ Addition ___ Alteration X New Construction
___ Renovation of Existing Building ___ Tenant Build-Out ___ Shell

Scope of Work - Building:
New steel framed building with light gauge metal stud infill. Brick and panel cladding with large amounts of impact rated aluminum storefront. Concrete slab on grade with epoxy floors throughout. Roof will be a standing seam. Building to be used as a Welcome Center with information kiosks, cultural displays, and generous porches. There will be a large lobby, offices, conference room, break room/ catering kitchen, media room, and interior and exterior restrooms. Facility will be designed to meet IBC and ADA requirements.

Scope of Work - Electrical:
The design will include a new meter and a 200amp 120/24 Volt single phase service to be fed underground from the nearest Alabama Power transformer. All interior and exterior lighting to be energy efficient LED lighting with occupancy sensors and photocells. Emergency egress lighting will be equipped with battery backup. Wet areas will be provided with GFI circuits and convenience outlets will be located throughout. HVAC systems will be provided 240v dedicated circuits appropriately sized.

Scope of Work – Mechanical / Refrigeration:
The building will be equipped with zoned heat pumps with supplementary electric reheat to heat and cool the interior areas. An additional fresh air unit will be provided to meet the International Mechanical Code. Exterior restrooms and plumbing chase will be mechanically vented and include electric heaters for freeze protection.

Scope of Work - Plumbing:
ADA fixtures will be used throughout in the restrooms. Each would be equipped with touchless valves. A tank electric water heater with recirculation will provide hot water to the restroom and janitor closets while an electric inline unit will provide hot water to the break room/ catering kitchen. A combination drinking fountain and bottle filler will be provided. Top off lines with backflow preventors will service any water features on site.

2. BUILDING DATA

Total Lot Area (sf) 125,453 Gross Area of Building All floors (sf) 8,132

Total Building Footprint (sf) 8,132 Building Height: 26 ft

Number of Stories: 1 Is there a basement? ___Yes X No

Existing Buildings: N/A
The building will remain in operation during construction ___ Yes ___No
If yes, add provisions for rigid safety barriers and dust barriers to protect the public during construction in accordance with the applicable provisions of IBC Chapter 33. Yellow safety tape is not acceptable.

Provide Level of Alterations per IEBC ___ 1 ___ 2 ___ 3

Renovations (Change of Occupancy)
Is the work in this building or space changing the occupancy type or use? ___Yes ___ No

Historic Buildings
Is this building a Historic Building? ___ Yes X No

Construction Type _IA _IB _IIA _IIB _IIIA _ IIIB
_IVA _IVB _IVC _IVHT _VA X VB

2.1 OCCUPANCY CLASSIFICATION

										Occupant Loads
X	Assembly 303	X	A-1	__	A-2	X	A-3	__	A-4	__ A-5	62.3
X	Business 304										5.2
___	Education 305										
___	Factory Industrial 306	__	F-1	__	F-2						
___	High-Hazard 307	__	H-1	__	H-2	__	H-3	__	H-4	__H-5	
___	Institutional 308	__	I-1	__	I-2	__	I-3	__	I-4	__I-3 ___Condition	
___	Mercantile 309										
___	Residential 310	__	R-1	__	R-2	__	R-3	__	R-4		
___	Storage 311	__	S-1	__	S-2	__	High-piled				
X	Utility and Miscellaneous 312										3.5

TOTAL OCCUPANT LOAD 71

3. Fire Rated Elements

Building Element	Required Rating	UL No. *
Structural frame; columns, girders, trusses	0	
Bearing walls exterior	0	
Non-bearing walls & partitions exterior	0	
Non-bearing walls & partitions interior	0	
Floor construction; supporting beams and joists	0	
Roof construction; supporting beams and joists	0	

Sprinkler system? ___Yes X No ___Partial
If "YES", provide Commercial Sprinkler Owners Information Certification:
Sprinkler type ___13 ___13R ___13D
Standpipes? ___Yes ___No ___Wet ___Dry ___Class
Fire / Smoke Alarm? X Yes ___No

Building Element	Required Rating	Hourly Rating	UL No. *
Ceiling-Floors	N/A	N/A	N/A
Beams	N/A	N/A	N/A
Columns	N/A	N/A	N/A
Ceiling-Roofs	N/A	N/A	N/A
Shafts-Exit	N/A	N/A	N/A
Shafts-Other	N/A	N/A	N/A
Corridor separation	N/A	N/A	N/A
Occupancy separation	N/A	N/A	N/A
Party/Fire wall separation	N/A	N/A	N/A
Smoke barrier separation	N/A	N/A	N/A
Tenant separations	N/A	N/A	N/A

* Or other approved agencies
- All fire rated walls shall be identified on plans by hatching, shading, etc.; show legend.
- Identify code section when using any special exceptions, etc.
- Reproduce full UL. Or other approved agencies details or reproductions of rated assemblies/penetrations on the drawings.

Draft Stopping (IBC 718.3 & 718.4) Draft stopping in floor? _Yes X No Draft stopping in attic? X Yes _No

4.Accessibility (IBC 11)

Does the design conforms to IBC Chapter 11 and ICC A117.1-2017? X Yes ___No
If no, explain below condition that will not allow building to be accessible:

5. Design Loads (City Ordinance 1609.3)

5.1 Ultimate Design Wind Speed (IBC 1609 or ASCE 7)
___Risk Cat. I-145MPH X Risk Cat. II-159MPH ___Risk Cat. III-169MPH ___Risk Cat. IV-179MPH

5.2 Live Loads (IBC 1607)
Roof 20 PSF Attic _____ PSF Floor _____ PSF Mezzanine_____ PSF

5.3 Wind-Borne Debris Region (IBC 1609)
This building will use impact resistant glass per (IBC 1609.2)? X Yes ___No
This building will use engineered shutters or other approved method? ___Yes X No

5.3 Flood Requirements (IBC 1612)
All projects located in a Special Flood Hazard Area shall comply with the City of Mobile Storm Water Management and Flood Control Ordinance. Does this project comply? X Yes __No
If no, explain why:

5.4 Special Inspections and Tests (IBC 17)
I have reviewed the requirements of IBC Section 17, specifically 1705; the design incorporates the requirements and is reflected on the drawings and in the specifications. Below are the requirements to be included:

The Contractor has been notified of his responsibility under Section 1704. X Yes ___No

5.5 Safety Glazing for Hazardous (IBC 2406)
I have identified on drawings where tempered glass is required in hazardous locations (2406.4) X Yes ___No

IPC TABLE 403.1
TOTAL NUMBER OF REQUIRED FIXTURES

OCCUPANCY	OCCUPANT LOAD	WATER CLOSETS				LAVATORIES			DRINKING FOUNTAIN	SERVICE SINK
		RATIO	MEN	RATIO	WOMEN	RATIO	MEN	WOMEN		
Assembly 203	102 per sex	1:125	1	1:65	2	1:200	1	1	1/500	1
Business 5	3 per sex	1:25	1	1:25	1	1:40	1	1	1/100	1
TOTAL REQUIRED		5				4			2	2
PROVIDED INSIDE		4 AND 1 URINALS				4			1	1
PROVIDED OUTSIDE		3				4 (3@ Fountain)			1	1

6. Fire Department Requirements:
The design professional shall provide the following required fire protection elements for the building.

Required water supply 2500 GPM @ 20 PSI

Method Used:
_____ The Insurance Service Office (ISO) Method _____ Iowa State University (ISU) Method,
_____ Illinois Institute of Technology (IIT) Method) X International Fire Code 2021 (IFC)

Key Boxes IFC 506: X Yes ___ No
Locks: ___Yes ___No
**required for buildings with fire protection systems, gates, non-standard fire service access i.e., elevators

Emergency Responder Communication Coverage IFC 510: ___Yes X No
**Signal strength survey required for structures over 50,000 SF, over three stories high, or those having a basement. This requirement may be requested for structures not meeting these parameters.

Provide a Life Safety Plan (LSP) for all commercial projects: X Yes ___No
**At a minimum, the Life Safety Plan shall illustrate the use for all areas, occupant loads for all areas, exit locations, exit access, exit capacity, maximum travel distance, exit lights, emergency lights, fire extinguishers, fire rated assemblies, assembly area seating layout and exit discharge.

Compliance Statement required for Fire Approval: ___Yes ___No
**Where fire apparatus access roads or a water supply for fire protection are required to be installed, such protection shall be installed and made serviceable prior to and during the time of construction.

SPECIAL INSPECTIONS SCHEDULE

CODE SECTION	SPECIAL INSPECTOR	INSPECTION	REQUIRED YES	REQUIRED NO	FREQUENCY OF INSPECTION CONTINUOUS	FREQUENCY OF INSPECTION PERIODIC
1705.2		STEEL CONSTRUCTION		X		
1705.3		CONCRETE CONSTRUCTION	X			
1705.4		MASONRY CONSTRUCTION		X		
1705.5		WOOD CONSTRUCTION		X		
1705.6		SOILS	X			
1705.7		DRIVEN DEEP FOUNDATIONS		X		
1705.8		CAST-IN-PLACE DEEP FOUNDATIONS		X		
1705.9		HELICAL PILE FOUNDATIONS		X		
1705.10		WIND RESISTANCE	X			
1705.11		SIESMIC RESISTANCE		X		
1705.12		TESTING & QUALIFICATION FOR SEISMIC RESISTANCE		X		
1705.13		SPRAYED FIRE-RESISTANT MATERIALS		X		
1705.14		MASTIC & INTUMESCENT FIRE RESISTANT COATINGS		X		
1705.15		EXTERIOR INSULATION & FINISH SYSTEMS		X		
1705.16		FIRE RESISTANT PENETRATIONS & JOINTS		X		
1705.17		SMOKE CONTROL		X		

OCCUPANCY AREA - CODE SUMMARY

OCCUPANCY	AREA (SF)	LOAD FACTOR	OCCUPANT LOAD
A ASSEMBLY	1868	30	62.3
B BUSINESS	785	150	5.2
U UTILITY	1055	300	3.5
GRAND TOTAL			71

Mott MacDonald Architects, Inc.
Architects
Engineers
Surveyors
MOTT MACDONALD

AFRICATOWN WELCOME CENTER
City of Mobile
1959 Bay Bridge Road Cutoff
Mobile, AL. 36610

REVISIONS DESCRIPTION

REV.	DATE:	
A	07/17/2023	30% Submission
B	10/02/2023	90% Submission
C	10/27/2023	100% Submission
D	12/7/2023	100% Review Comments
E	3/7/2024	COM Comments Revisions
F	05/09/2024	Permitting Revision 2
G	06/21/2024	Code Summary Revision

DATE: 10/27/2023
DESIGNED BY: A. Marasca
DRAWN BY: QG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE
CODE SUMMARY

SHEET NUMBER
G101

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LIFE SAFETY LEGEND

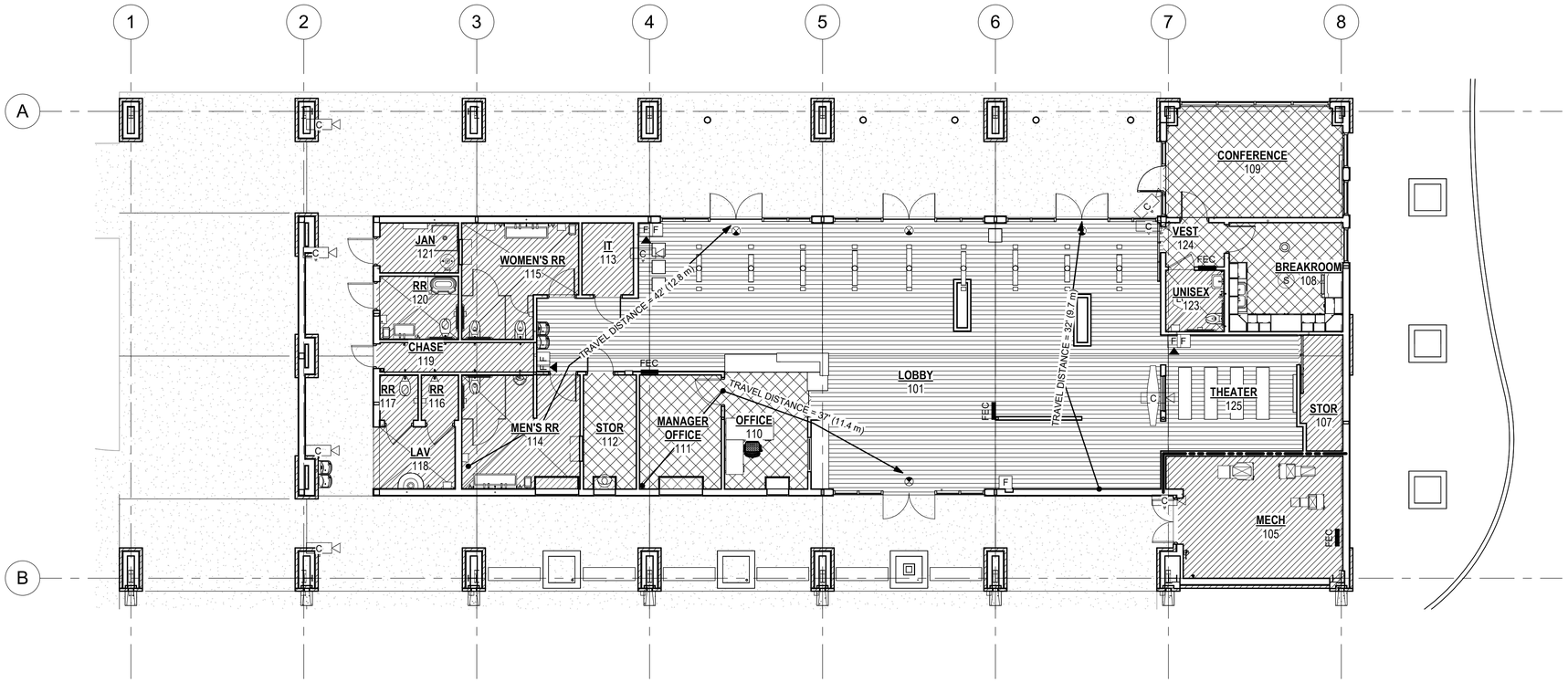
- EXIT - WITH CLEAR EGRESS WIDTH (34")
- TRAVEL DISTANCE TO AN EXIT (TRAVEL DISTANCE 57'- 6" +/-)
- FHC — FIRE HOSE CABINET
- FEC — FIRE EXTINGUISHER CABINET
- FE — FIRE EXTINGUISHER
- EXIT LIGHT

RATED PARTITIONS

- 1 HOUR FIRE BARRIER

OCCUPANCY AREA

Room #	Occupancy	Occupancy	Room Name	Area	Load Factor	Occupant Load
101	A ASSEMBLY	A3	LOBBY	1660 SF	15 SF	110.7
125	A ASSEMBLY	A1	THEATER	208 SF		
A ASSEMBLY				1868 SF		110.7
108	B BUSINESS	B	BREAKROOM	166 SF	200 SF	0.8
109	B BUSINESS	B	CONFERENCE	252 SF	150 SF	1.7
110	B BUSINESS	B	OFFICE	128 SF	150 SF	0.9
111	B BUSINESS	B	MANAGER OFFICE	124 SF	150 SF	0.8
112	B BUSINESS	B	STOR	80 SF	300 SF	0.3
124	B BUSINESS	B	VEST	34 SF		
B BUSINESS				785 SF		4.5
105	U UTILITY	U	MECH	270 SF	300 SF	0.9
107	U UTILITY	U	STOR	66 SF	300 SF	0.2
113	U UTILITY	U	IT	49 SF	300 SF	0.2
114	U UTILITY	U	MEN'S RR	177 SF	300 SF	0.6
115	U UTILITY	U	WOMEN'S RR	154 SF	300 SF	0.5
116	U UTILITY	U	RR	22 SF	300 SF	0.1
117	U UTILITY	U	RR	23 SF	300 SF	0.1
118	U UTILITY	U	LAV	67 SF	300 SF	0.2
119	U UTILITY	U	CHASE	61 SF	300 SF	0.2
120	U UTILITY	U	RR	66 SF	300 SF	0.2
121	U UTILITY	U	JAN	52 SF	300 SF	0.2
123	U UTILITY	U	UNISEX	48 SF		
U UTILITY				1055 SF		3.4
Grand total				3708 SF		118.5



Department Legend

- A ASSEMBLY
- B BUSINESS
- U UTILITY

TRUE NORTH / PROJECT NORTH

LIFE SAFETY PLAN
SCALE: 1/8" = 1'-0"

8' 4' 0' 8' 16'

100% SUBMITTAL

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AFRICATOWN WELCOME CENTER
City of Mobile
1959 Bay Bridge Road Cutoff
Mobile, AL. 36610

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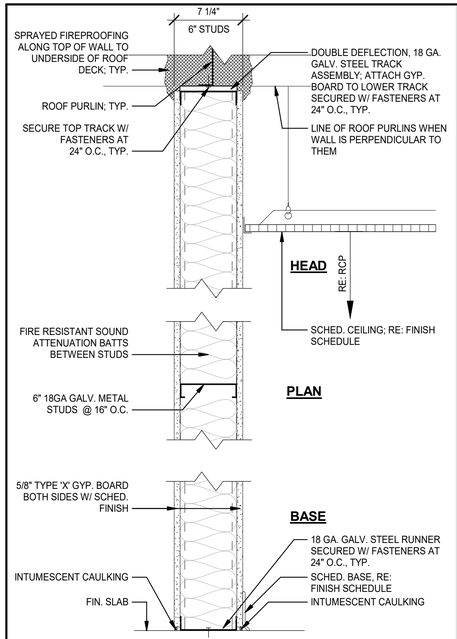
SHEET TITLE
LIFE SAFETY PLAN

SHEET NUMBER
G102

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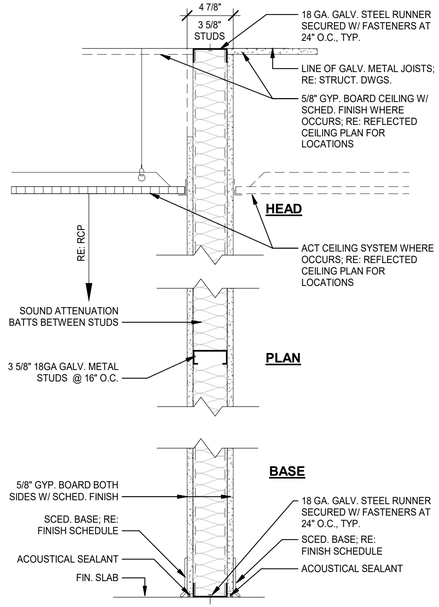


1 1 HR-RATED PARTITION TO DECK

(UL DESIGN NO. U419)

NOTES:

1. ONE (1) HOUR RATED, NON-LOAD BEARING, INTERIOR PARTITION.
2. ALL PENETRATIONS AND TERMINATIONS TO BE CAULKED AND SEALED TO MAINTAIN FIRE RATING.

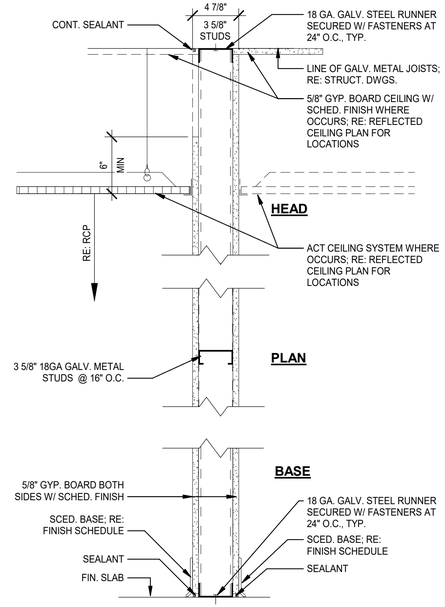


2 NON-RATED PARTITION

(3 5/8" STUDS) (STC 45) ACCOUSTICAL

NOTE:

PROVIDE MOISTURE RESISTANT GYP. BOARD IN WET LOCATION; SEE FINISH INDEX.

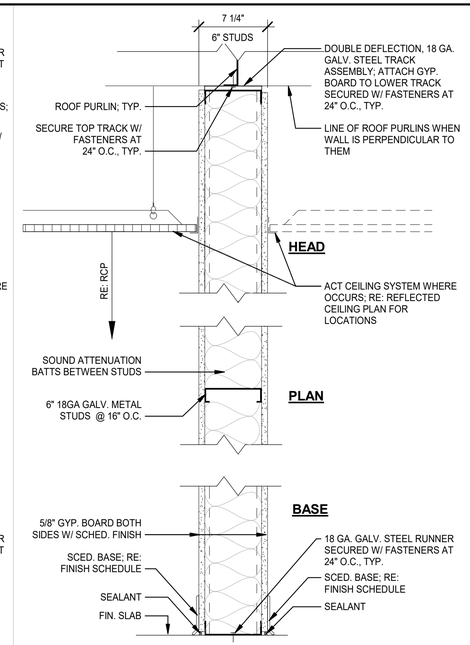


3 NON-RATED PARTITION

(3 5/8" STUDS)

NOTE:

PROVIDE MOISTURE RESISTANT GYP. BOARD IN WET LOCATION; SEE FINISH INDEX.



4 NON-RATED PARTITION

(6" STUDS) (STC 45) ACCOUSTICAL

NOTE:

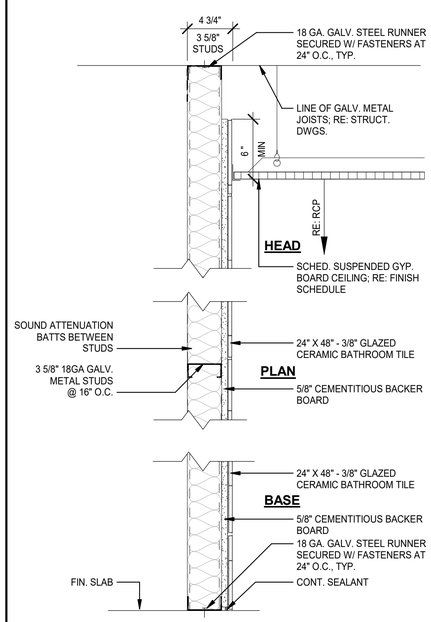
PROVIDE MOISTURE RESISTANT GYP. BOARD IN WET LOCATION; SEE FINISH INDEX.

WALL TYPES GENERAL NOTES:

1. REFER TO LIFE SAFETY PLANS FOR LOCATIONS OF RATED WALLS.
2. SEE FINISH SCHEDULE FOR FINISHES TO ALL WALLS (PAINT, WALL COVERINGS, HARD TILE, WOOD, ETC.).
3. ALL INTERIOR PARTITIONS SHALL FOLLOW IBC SECTION 1607.16 (SHALL RESIST HORIZONTAL LOAD OF 5 PSF).
4. PROVIDE RESILIENT SEALANT CONTINUOUS AT ALL SOUND WALL ASSEMBLIES.
5. PROVIDE MOISTURE RESISTANT GYPSUM WALL BOARD INSIDE FACES OF JANITOR CLOSETS, TOILET AND RESTROOMS. (UNLESS OTHERWISE NOTED)
6. PROVIDE CEMENTITIOUS TILE BACKER BOARD WHERE TILE IS INSTALLED ON WALLS.

GENERAL NOTES FOR FIRE RATED WALLS AND SMOKE PARTITIONS:

1. AT ALL FIRE WALLS, FIRE BARRIERS, FIRE PARTITIONS, SMOKE BARRIERS AND SMOKE PARTITIONS OR ANY REQUIRED TO HAVE PROTECTED OPENINGS OR PENETRATIONS SHALL BE EFFECTIVELY AND PERMANENTLY IDENTIFIED WITH SIGNS OR STENCILING AS REQUIRED BY IBC 703.5 2021 EDITION. SUCH IDENTIFICATION SHALL: (1) BE LOCATED IN ACCESSIBLE CONCEALED FLOOR, FLOOR-CEILING OR ATTIC SPACES; (2) BE REPEATED AT INTERVALS NOT EXCEEDING 30 FEET MEASURE HORIZONTALLY ALONG THE WALL OR PARTITION; (3) INCLUDE LETTERING NOT LESS THAN 0.5 INCHES IN HEIGHT, INCORPORATING THE SUGGESTED WORDING: "FIRE AND/OR SMOKE BARRIER-PROTECT ALL OPENINGS", OR OTHER WORDING.; (4) SHALL INCLUDE THE DESIGNATION OF THE BARRIER SUCH AS: "1-HOUR FIRE BARRIER PROTECT ALL OPENINGS", "2-HOUR FIRE BARRIER-PROTECT ALL OPENINGS", "1-HOUR FIRE/SMOKE BARRIER-PROTECT ALL OPENING", "2-HOUR FIRE/SMOKE BARRIER- PROTECT ALL OPENINGS", "SMOKE PARTITION-PROTECT ALL OPENINGS"
2. PENETRATIONS FOR CABLES, CONDUITS, PIPES AND MECHANICAL DUCTS SHALL BE PROTECTED BY A SYSTEM OF MATERIAL THAT IS CAPABLE OF LIMITING THE TRANSFER OF SMOKE.

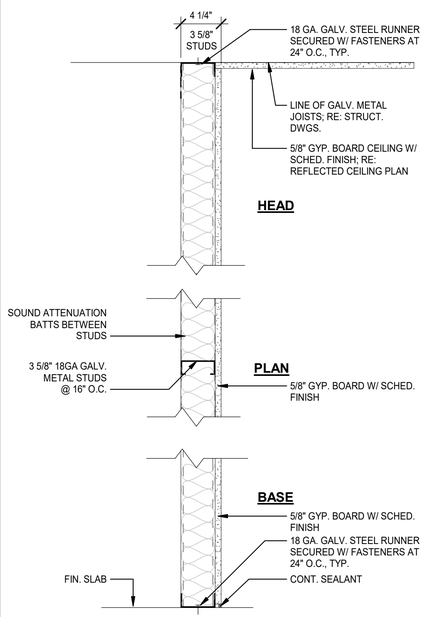


5 FURRED / CHASE WALL PARTITION

(3 5/8" STUDS)

NOTE:

PROVIDE MOISTURE RESISTANT GYP. BOARD IN WET LOCATION; SEE FINISH INDEX.

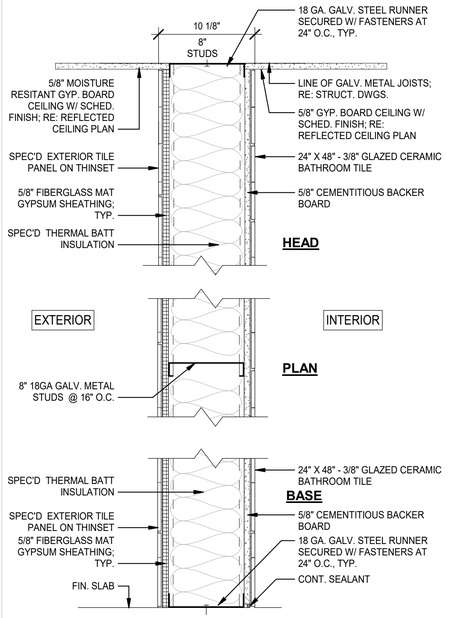


6 FURRED / CHASE WALL PARTITION

(3 5/8" STUDS)

NOTE:

PROVIDE MOISTURE RESISTANT GYP. BOARD IN WET LOCATION; SEE FINISH INDEX.



7 EXTERIOR PARTITION AT RESTROOMS

(8" STUDS)

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Engineers
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MOTT MACDONALD

AFRICATOWN WELCOME CENTER
City of Mobile
1959 Bay Bridge Road Cutoff
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REVISIONS DESCRIPTION

REV.	DATE
A	07/17/2023
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CHECKED BY: C. Echols
PROFESSION; ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE

PARTITION TYPES

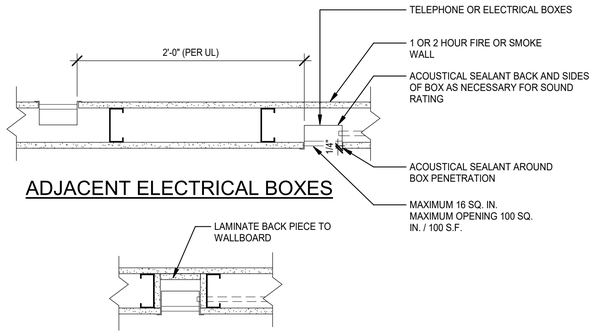
SHEET NUMBER.

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ADJACENT ELECTRICAL BOXES

SHALLOW FIVE SIDE BOX DETAIL

REQUIRED WHERE BOX EXCEEDS 16 SQ. INCHES OR AGGREGATE OF BOXES EXCEEDS 100 SQ. IN. / 100 S.F. OF WALL AREA

ELECTRICAL JUNCTION BOXES

WHEN A METALLIC JUNCTION BOX FOR ELECTRICAL RECEPTACLES OR SWITCHES IS CONTAINED WITHIN A RATED WALL OF GYPSUM DRYWALL CONSTRUCTION AND AN OPENING IS PROVIDED FOR THE BOX IN THE SURFACE OF THAT WALL, THE AREA OF THE OPENING MAY NOT EXCEED 16 SQUARE INCHES, UNLESS THE JUNCTION BOX IS ENCLOSED BY A "5-SIDED BOX" (SEE APPROVED DETAILS).

THE AGGREGATE AREA OF ALL SUCH JUNCTION BOXES IN A RATED WALL NOT ENCLOSED BY "5-SIDED BOXES" DESCRIBED ABOVE SHALL NOT EXCEED 100 SQUARE INCHES IN 100 SQUARE FEET OF WALL AREA AS MEASURED FROM THE FLOOR TO STRUCTURAL DECK OR RATED MEMBRANE.

JUNCTION BOXES WITH OPENING ON OPPOSITE FACES OF RATED WALLS SHALL HAVE A HORIZONTAL SEPARATION OF 24 INCHES AS A MINIMUM, REGARDLESS OF BOX SIZE, UNLESS ENCLOSED BY "5-SIDED BOXES".

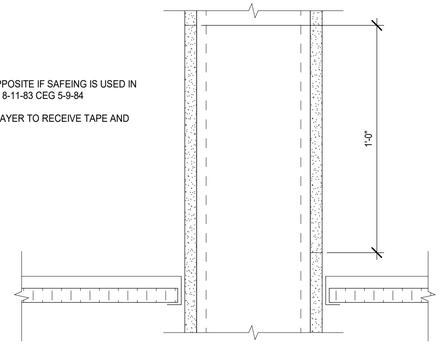
LOCATIONS OF STUDS DO NOT HAVE ANY BEARING ON THE ABOVE REQUIREMENTS, NOR DOES THE USE OF MINERAL WOOL FIRE SAFING ALTER THESE REQUIREMENTS.

1 G104 JUNCTION BOX STUD WALL DETAIL

Scale: 1 1/2" = 1'-0"

6" 3" 0' 6" 1'

NOTES:
1. JOINTS MAY BE OPPOSITE IF SAFEING IS USED IN CAVITY. REF: CEG 8-11-83 CEG 5-9-84
2. JOINTS IN FINISH LAYER TO RECEIVE TAPE AND JOINT COMPOUND

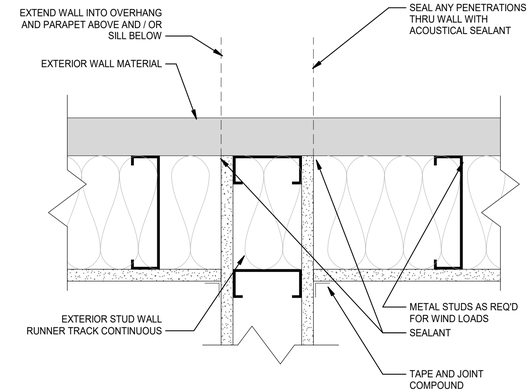


ONE HOUR WALL

2 G104 HORIZ. JOINT REINF. ABOVE SUSP. CEILINGS

Scale: 3" = 1'-0"

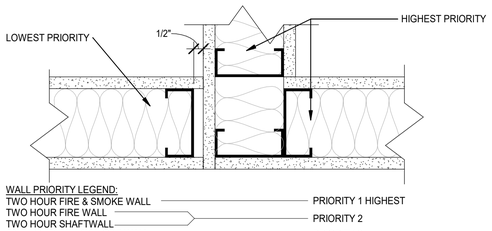
4" 2" 0' 4" 8"



3 G104 FIRE/SMOKE WALL - PLAN VIEW DETAIL

Scale: 3" = 1'-0"

4" 2" 0' 4" 8"



WALL PRIORITY LEGEND:
- TWO HOUR FIRE & SMOKE WALL — PRIORITY 1 HIGHEST
- TWO HOUR FIRE WALL, TWO HOUR SHAFTWALL — PRIORITY 2
- ONE HOUR FIRE & SMOKE WALL — PRIORITY 3
- ONE HOUR FIRE WALL — PRIORITY 4
- NON-RATED WALL — PRIORITY 5 LOWEST

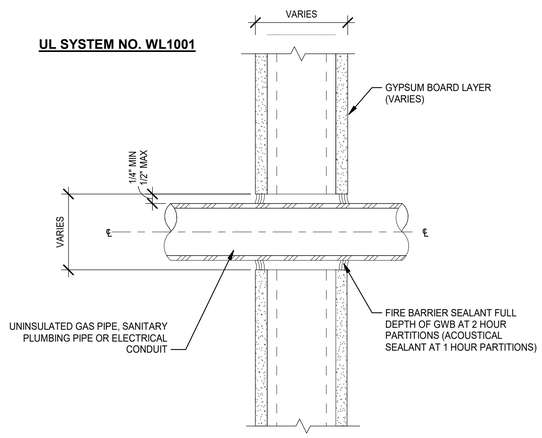
NOTE:
1. SCHEDULE CONSTRUCTION OF WALLS ACCORDING TO PRIORITY.
2. ALL PRIORITY 1 THRU 4 WALLS SHOULD BE FRAMED WITH ONE SIDE DRYWALL AT THE 40% CONSTRUCTION SURVEY
3. BOTH SIDES OF PRIORITY 1 THRU 4 WALLS SHALL BE SEALED AND STENCILED AT THE 80% CONSTRUCTION SURVEY

4 G104 PRIORITY WALL LEGEND

Scale: 3" = 1'-0"

4" 2" 0' 4" 8"

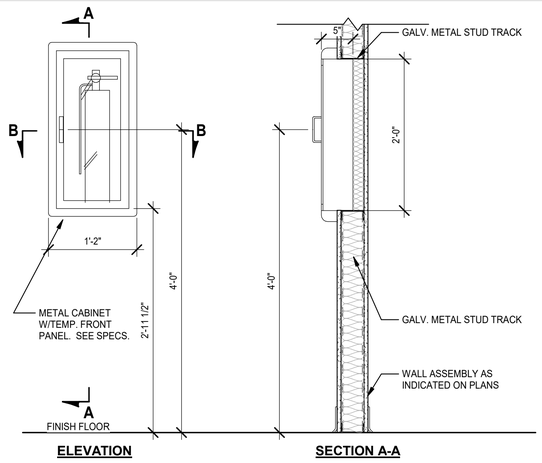
UL SYSTEM NO. WL1001



5 G104 PENETRATION DETAIL

Scale: 3" = 1'-0"

4" 2" 0' 4" 8"



ELEVATION **SECTION A-A**

SECTION B-B

6 G104 TYPICAL SEMI-RECESSED FIRE EXTINGUISHER CABINET DETAIL

Scale: 1" = 1'-0"

1' 6" 0' 1' 2'

Mott MacDonald Architects, Inc.
AIA 501-C3 Dauphin Street
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Fax: (251) 343-8902
Architects Engineers Surveyors
MOTT MACDONALD

AFRICATOWN WELCOME CENTER
City of Mobile
1959 Bay Bridge Road Cutoff
Mobile, AL. 36610

REVISIONS DESCRIPTION
- 30% Submission
- 90% Submission
- 100% Submission

DATE	REV
07/17/2023	A
10/02/2023	B
10/27/2023	C

DATE: 10/27/2023
DESIGNED BY: A. Marasca
DRAWN BY: QG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P. MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE
FIRE PROTECTION DETAILS

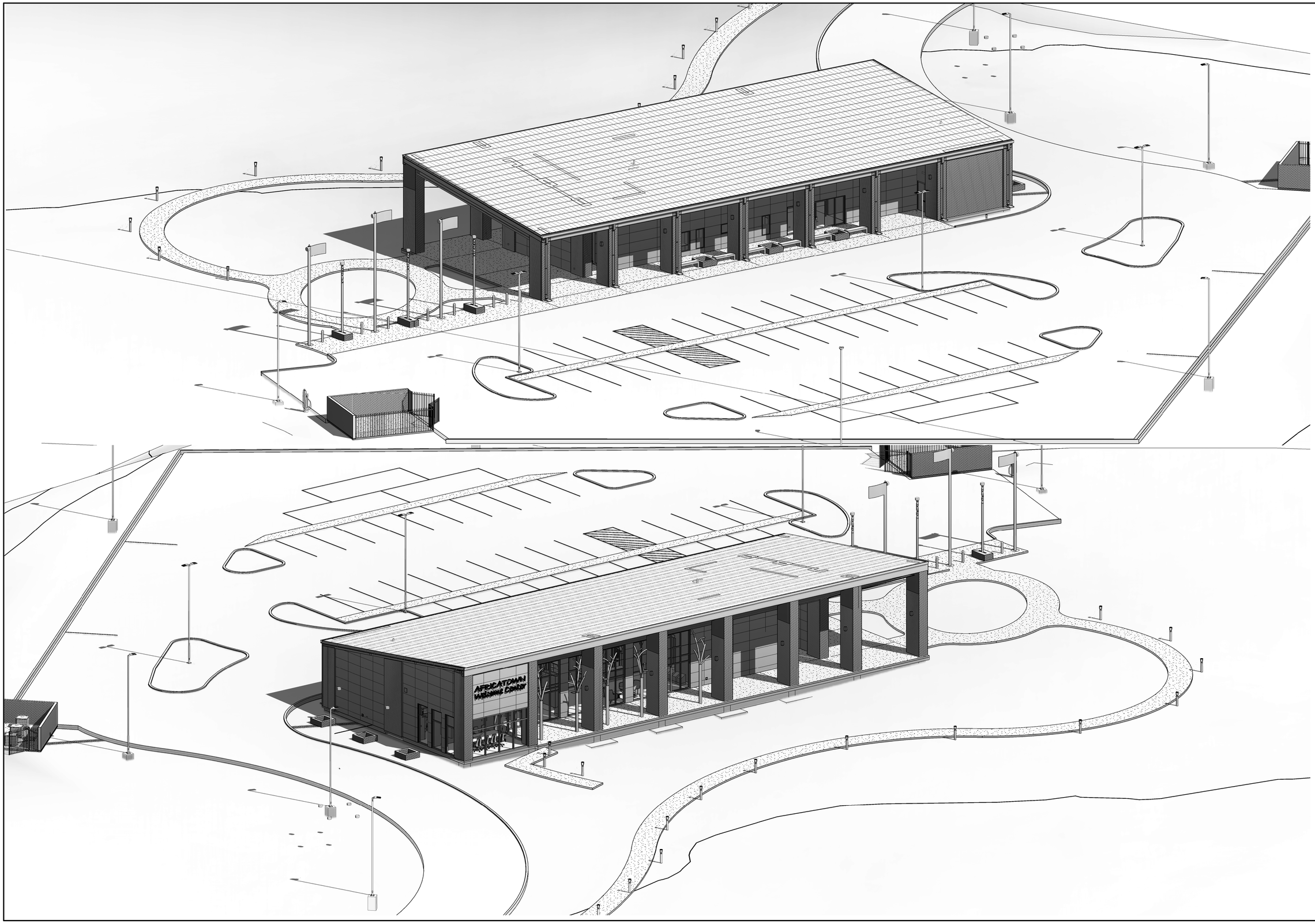
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3/8/2024 11:44:57 AM



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Architects
Engineers
Surveyors

MOTT MACDONALD

AFRICATOWN WELCOME CENTER

City of Mobile

1959 Bay Bridge Road Cutoff
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REVISIONS	DESCRIPTION	REV	DATE
	30% Submission	A	07/17/2023

DATE: 10/27/2023
DESIGNED BY: A. Marasca
DRAWN BY: QG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
REGISTERED ARCHITECT
6826

THIS DRAWING IS NOT FOR CONSTRUCTION

SHEET TITLE

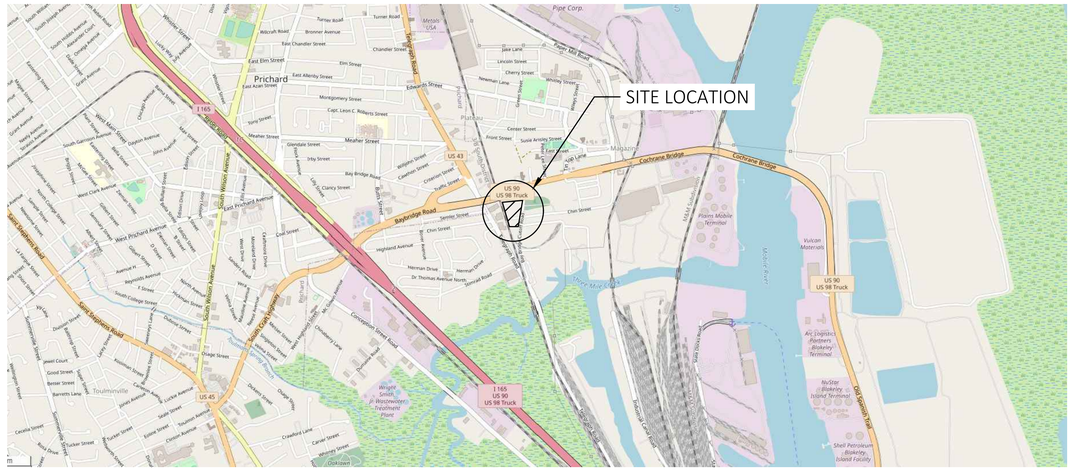
OVERALL AERIAL SITE VIEWS

SHEET NUMBER

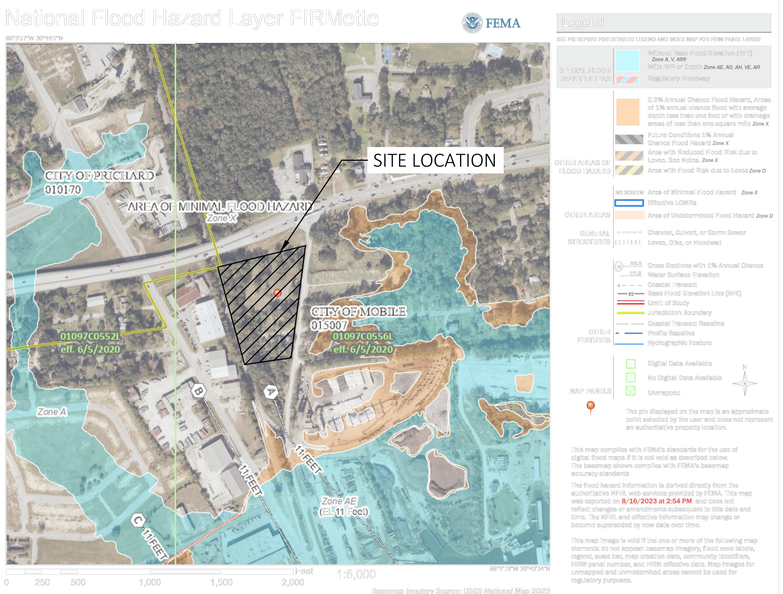
G201

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SITE LOCATION MAP
(N.T.S.)



FEMA FIRM DATED 6/5/2020 (N.T.S.)
SITE IS NOT LOCATED IN A FLOOD HAZARD ZONE

SHEET INDEX

C100	GENERAL NOTES
C101	PLANS LEGEND AND ABBREVIATIONS
C200	EXISTING CONDITIONS / DEMOLITION PLAN
C201	UTILITY DEMOLITION PLAN
C300	SITE PLAN
C400	GRADING PLAN
C401	DRAINAGE PLAN
C500	UTILITY PLAN
C600-C602	EROSION & SEDIMENT CONTROL PLANS
C700	DRIVEWAY PLAN / PROFILE
C701	DRIVEWAY CROSS SECTIONS
C702	TRAIL PLAN / PROFILE
C703-C705	TRAIL CROSS SECTIONS
C800-C807	DETAIL DRAWINGS

SITE SUMMARY

ADDRESS:	1959 BAY BRIDGE CUTOFF ROAD
PARCEL ID:	R022902440003076.000
OWNER:	CITY OF MOBILE P.O. BOX 1827 MOBILE, AL 36633
ZONING:	B-3 (COMMUNITY BUSINESS)
TOTAL AREA:	2.88+/- AC
DISTURBED AREA:	2.34+/- AC

CONTACTS

ARCHITECT:
MOTT MACDONALD
107 ST. FRANCIS ST
SUITE 2900
MOBILE, AL 36602
PHONE: (251) 298-8476
CONTACT: ANDREW MARASCA, RA

ENGINEER:
SARCOR, LLC
1116 20TH STREET SOUTH #322
BIRMINGHAM, AL 35205
PHONE: 205-227-8733
CONTACT: JEFFREY HAVERCROFT, P.E.

SURVEYOR:
WATTIER SURVEYING, INC.
4318 DOWNTOWNER LOOP N
SUITE H
MOBILE, AL 36609
PHONE: 251-342-2640
CONTACT: MARK A. WATTIER, PLS

LANDSCAPE ARCHITECT:
CHRISTIAN PREUS LANDSCAPE ARCHITECTURE
307 DE LA MARE AVE
FAIRHOPE, AL 36532
PHONE: (855) 539-5086
CONTACT: MATTHEW PEA

GENERAL NOTES

1. SITE SURVEY WAS PROVIDED BY THE FOLLOWING COMPANY:

   WATTIER SURVEYING, INC.
   4318 DOWNTOWNER LOOP N
   SUITE H
   MOBILE, AL 36609
   PHONE: 251-342-2640
   CONTACT: MARK A. WATTIER, P.L.S.

2. ALL PHASES OF SITE WORK FOR THIS PROJECT SHALL MEET OR EXCEED THE OWNER/DEVELOPER SPECIFICATIONS. THE ENGINEER HAS MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS IN THE DRAWINGS AND/OR SPECIFICATIONS SHALL NOT EXCUSE THE CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS. ALL WORK SHALL BE AS INDICATED AND STIPULATED ON THE DRAWINGS AND IN THE SPECIFICATIONS.

3. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS AND FAMILIARIZE HIMSELF / HERSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.

4. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS AND/OR CONTRACT DOCUMENTS.

5. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES, AND FOR COORDINATING ALL PORTIONS OF WORK UNDER THE CONTRACT. THE CONTRACTOR SHALL COOPERATE WITH THE OWNER'S REPRESENTATIVE, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.

6. THESE DRAWINGS ARE FORMATTED FOR 24" X 36". OTHER SIZE VERSIONS ARE NOT PRINTED TO THE SCALE CALLED OUT OR SHOWN.

7. CONTRACTOR SHALL PROVIDE THE OWNER WITH AN AS-BUILT SURVEY OF THE TOTAL SITE, INCLUDING, BUT NOT LIMITED TO, TOPOGRAPHY, SITE UTILITIES, TREE LOCATIONS, ETC., AS PART OF THE CLOSE-OUT DOCUMENTS.

8. CONTRACTOR IS RESPONSIBLE FOR THE COST AND FEES ASSOCIATED WITH THE EXECUTION OF WORK. THIS INCLUDES ANY AND ALL PERMITS AND IMPACT FEES INCLUDING, BUT NOT LIMITED TO, DEMOLITION PERMITS, ENVIRONMENTAL OR GRADING PERMITS, BUILDING PERMITS, SANITARY SEWER CONNECTION OR IMPACT FEES, WATER TAP FEES, ETC.

9. IN THE CASE OF UNFORESEEN CONSTRUCTION COMPLICATIONS OR DISCREPANCIES, THE CONTRACTOR IS TO IMMEDIATELY NOTIFY THE ENGINEER OF RECORD IN WRITING.

10. IF THE CONTRACTOR DAMAGES ANY SITE FEATURES DURING CONSTRUCTION, HE SHALL AT HIS OWN EXPENSE REPLACE OR REPAIR THE FEATURES IMMEDIATELY TO ORIGINAL CONDITION AND QUALITY AS APPROVED BY THE OWNER OR DESIGNATED REPRESENTATIVE.

11. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SITE SAFETY AND FOR COMPLIANCE WITH ALL SAFETY CODES AND REGULATIONS OF THE GOVERNING JURISDICTIONS.

12. DEVIATIONS FROM THESE PLANS AND ANY ASSOCIATED SPECIFICATIONS WITHOUT PRIOR WRITTEN CONSENT OF THE ENGINEER OF RECORD MAY CAUSE WORK TO BE UNACCEPTABLE.

13. WHEN APPLICABLE, FIRE DEPARTMENT ACCESS SHALL BE ALWAYS MAINTAINED.

14. WHEN APPLICABLE, SUFFICIENT BARRICADES, LIGHTS, SIGNS, AND OTHER TRAFFIC CONTROL DEVICES AND METHODS WHICH MAY BE NECESSARY FOR THE PUBLIC SAFETY AND PROTECTION SHALL BE IN ACCORDANCE WITH GOVERNING ORDINANCES AND M.U.T.C.D. (CURRENT EDITION) AND SHALL BE PROVIDED AND MAINTAINED THROUGHOUT CONSTRUCTION.

15. AT A MINIMUM, WORK WILL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE CITY OF MOBILE STANDARDS AND SPECIFICATIONS FOR THE CONSTRUCTION OF PUBLIC WORKS PROJECTS.

2 16. ~~CONTACT THE STORMWATER MANAGEMENT OFFICE AT (251) 208-7151, 48 HOURS BEFORE STARTING TO WORK TO SCHEDULE STORMWATER AND CIVIL CONSTRUCTION INSPECTIONS.~~

17. A FINAL INSPECTION IS REQUIRED BEFORE THE PROJECT CAN BE RELEASED.

MOTT MACDONALD
Architects Engineers Surveyors
107 St. Francis Street - Suite 2900
Mobile, AL 36602
Telephone (251) 343-4366 Fax (251) 343-6902

AFRICATOWN WELCOME CENTER

City of Mobile - Africatown Welcome Center 1959
1959 Bay Bridge Cutoff Road
Mobile, Alabama 36610

ALABAMA LICENSED No. 32428 PROFESSIONAL 10/27/2023 ENGINEER JEFFREY V. HAVERCROFT

DATE	REV	REVISIONS DESCRIPTION
10/23/23		90% CD SUBMITTAL
10/27/23		100% CD SUBMITTAL
11/27/23	1	REVISE DEMO NOTES, DRAINAGE CALLOUTS
01/02/24	2	CoM LD PERMIT REVIEW (REVISED GRADING / DRAINAGE AND EROSION CONTROL PLANS)

Date: 10/27/23
Designed By: Jeffrey Havercroft
Drawn By: Jeffrey Havercroft
Checked By: Gokmen Pacal
Profession: CIVIL
Project Architect: Andrew Marasca
M.M.A. Project Number: 502100720

SARCOR

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
C100

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PLANS LEGEND AND ABBREVIATION SHEET

SITE

PROPERTY LINE

ADJACENT / OFF-SITE PROPERTY LINE — PL — PL

RIGHT-OF-WAY LINE — ROW

ROADWAY CENTERLINE

FENCE — x — x

TREE LINE

HANDRAIL

TREES (TYPICAL)

BENCHMARK

SIGN (SINGLE POLE)

BOLLARD

SURVEY MONUMENT FOUND

SURVEY MONUMENT SET

EROSION CONTROL

SILT FENCE — SF

LIMITS OF DISTURBANCE

TREE PROTECTION — TP

INLET PROTECTION

TEMPORARY SEEDING — TS

MULCHING — MU

PERMANENT SEEDING — PS

TEMPORARY CONSTRUCTION ENTRANCE — TCE

OUTLET PROTECTION

EROSION CONTROL BLANKET — ECB

EXISTING PAVEMENT (RETAIN)

EXISTING PAVEMENT (REMOVE)

EXISTING PAVEMENT (RETAIN & OVERLAY)

CONCRETE (EXISTING OR REQUIRED)

EXISTING CONCRETE (REMOVE)

DEMOLISION

UTILITIES

	EXISTING	PROPOSED
SANITARY SEWER LINE	S	SS
OVERHEAD ELECTRIC LINE	OE	OE
UNDERGROUND ELECTRIC LINE	UE	UE
OVERHEAD TELECOM LINE	OT	OT
UNDERGROUND TELCOM LINE	UT	UT
GAS LINE	GAS	GAS
WATER LINE	W	W
SANITARY SEWER MANHOLE	S	SS
SANITARY SEWER CLEANOUT	CO	CO
POWER POLE		
GUY ANCHOR		
LIGHT POLE		
POWER MANHOLE	P	P
TELCOM PEDESTAL	T	T
TELCOM MANHOLE	T	T
GAS VALVE	GV	GV
FIRE HYDRANT		
WATER VALVE	WV	WV
WATER METER		

GRADING AND DRAINAGE

	EXISTING	PROPOSED
MINOR (1') CONTOUR LINE	574	574
MAJOR (5') CONTOUR LINE	575	575
STORM DRAIN LINE		
STORM DRAIN MANHOLE	D	D
CATCH BASIN	CB	CB
SLOPE ARROW	2.00%	
STORM WATER FLOW ARROW		

ABBREVIATIONS

ACRE	AC
ALABAMA DEPARTMENT OF TRANSPORTATION	ALDOT
APPROXIMATE(LY)	APP
ASPHALT	ASPH
BARBED WIRE	B/W
BEARING	BRNG
BENCH MARK	BM
BOUNDARY	BDY
BUILDING	BLDG
CAST-IN-PLACE	CIP
CATCH BASIN	CB
CENTERLINE	℄
CHAIN LINK	C/L
CONCRETE	CONC
CONSTRUCTION LIMITS	CONST LIM
CORNER	COR
CORRUGATED METAL PIPE	CMP
COUNTY	CO
COUNTY ROAD	CO-RD
CREEK	CK
CROSS SECTION	X-SECT
CUBIC	CU
CUBIC FEET PER SECOND	CFS
CUBIC YARDS	CU YD
CULVERT	CULV
CURB AND GUTTER	C&G
DEED BOOK	DB
DIAMETER	DIA
DIRECTION	DIR
DISTANCE	DIST
DOUBLE	DBL
DRAINAGE AREA	DA
DRIVE	DR
DROP INLET	DI
EACH	EA
EASEMENT	ESMT
EAST	E
EDGE OF PAVEMENT	EP
ELEVATION	EL OR ELEV
EXCAVATION	EXCAV
EXISTING	EX
FEET	FT
FINISHED GRADE	FG
FIRE HYDRANT	FH
FLOW LINE	FL
GRAVEL	GRV
GUARDRAIL	GR
GUY WIRE	GUY
HEADWALL	HDWL
HIGHWAY	HWY
HORIZONTAL	HOR
IN PLACE	IN-PL
INCHES	IN
INCLUDING	INCL
IRON PIN FOUND	IPF
IRON PIN SET	IPS
JUNCTION BOX	JB
LANE	LN
LEFT	LT
LIGHT POLE	LP
LIMIT	LIM
LINEAR	LIN
MANHOLE	MH
MAP BOOK	MB
MARKER	MKR
MAXIMUM	MAX
MEASUREMENT	MEAS
MEDIAN	MED
MILE POST	MP
MILES	MI
MILES PER HOUR	MPH
MINIMUM	MIN
MONUMENT	MON
MULTIPLE	MULT
NORTH	N
NORTHING-EASTING	N-E
NOT IN CONTRACT	NIC
NOT TO SCALE	NTS
NUMBER	NO
ON CENTER	OC
OVERHEAD ELECTRIC	OE
OVERHEAD TELEPHONE/TELCOM	OT
PAGE	PG
PAVED	PVD
PAVEMENT	PVMT
PEDESTAL	PED
PIPE END TREATMENT	PET
POINT OF BEGINNING	POB
POINT OF CURVATURE	PC
POINT OF INTERSECTION	PI
POINT OF TANGENCY	PT
POLYVINYL CHLORIDE PIPE	PVC
POUND	LB
POWER POLE	PP
PRESENT	PRES
PROJECT	PROJ
PROPERTY LINE	℄
PROPOSED	PROP
QUANTITY	QUANT
RADIUS	R
RAILROAD	RR
REINFORCED CONCRETE	RC
RELOCATE	RELC
REMOVE	REM
REQUIRED	REQ
RETAIN(ING)	RET
REVISION	REV
RIGHT	RT
RIGHT OF WAY	ROW
RIVER	RIV
ROAD	RD
ROADWAY	RDWY
SANITARY SEWER	SS
SECTION	SEC
SERVICE	SERV
SHOULDER	SHLD
SIDEWALK	SW
SOUTH	S
SPECIAL	SP
SQUARE	SQ
SQUARE FEET	SQ FT
SQUARE YARD	SQ YD
STANDARD	STD
STATION	STA
STORM DRAIN	STRM
STREET	ST
STRUCTURE	STR
SUB-GRADE	SG
SURVEY	SURV
TANGENT	TAN
TELEPHONE/TELECOM	TEL
TEMPORARY	TEMP
TOWNSHIP	TSHP
TYPE	TY
UNDERGROUND	U/G
UNDERGROUND ELECTRIC	UE
UNDERGROUND TELEPHONE/TELCOM	UT
UNKNOWN	UNK
UNPAVED	UNPVD
VALLEY GUTTER	VG
VARIABLE	VAR
VERTICAL	VERT
VITRIFIED CLAY PIPE	VCP
VOLUME	VOL
WEST	W
YARD	YD

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AFRICATOWN WELCOME CENTER

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ALABAMA LICENSED No. 32428 PROFESSIONAL ENGINEER JEFFREY V. HAVERCROFT 10/27/23

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Drawn By: Jeffrey Havercroft
Checked By: Gokmen Pacal
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SARCOR

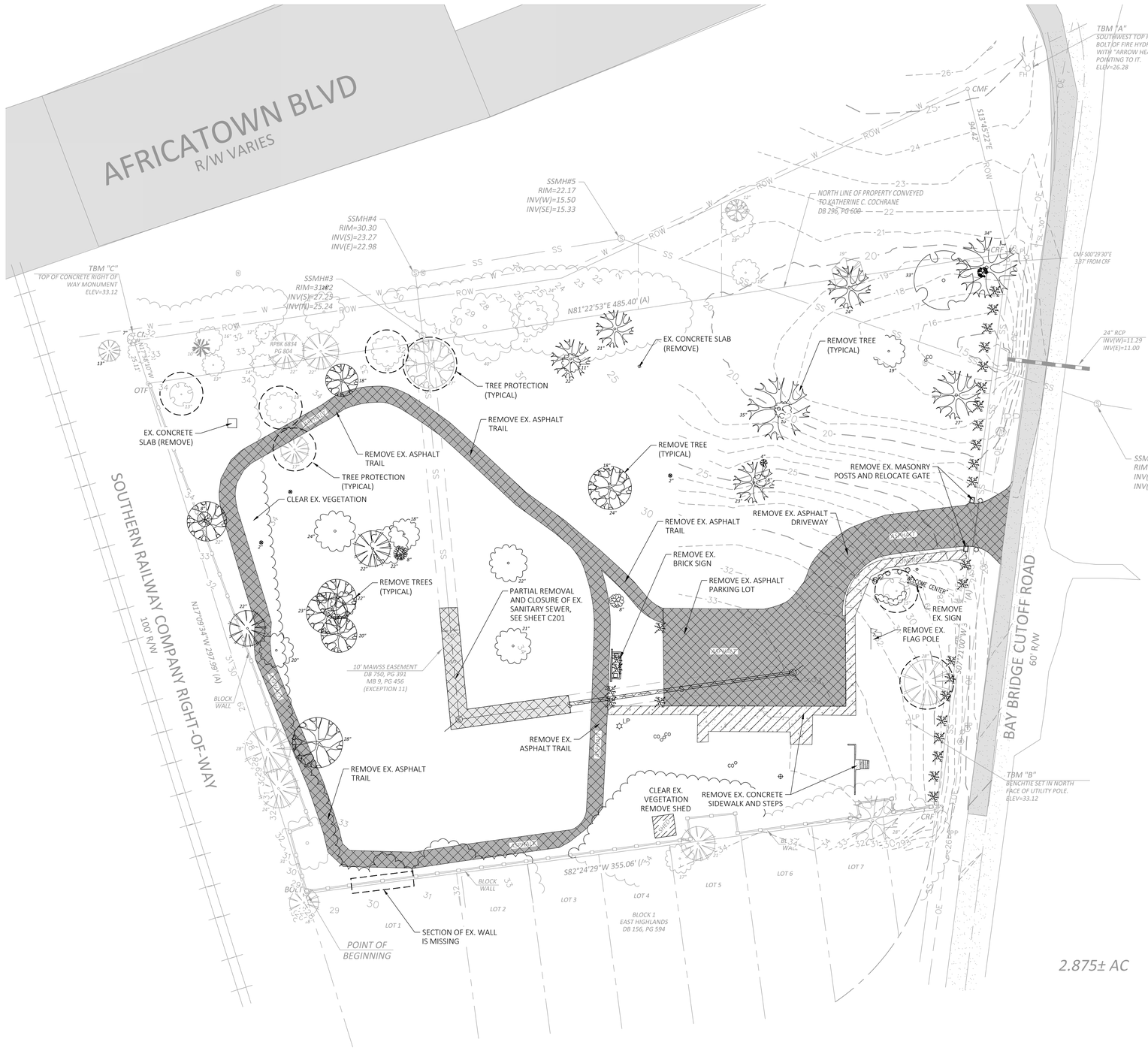
SHEET TITLE

PLANS LEGEND AND ABBREVIATIONS

SHEET NUMBER

C101

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DEMOLITION NOTES

1. THE CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES AND STRUCTURES, ABOVE OR BELOW GROUND, THAT MIGHT INTERFERE WITH DEMOLITION. ANY DAMAGE TO SUCH UTILITIES OR STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE OWNER.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL OF ALL DEBRIS.
3. CONTRACTOR IS RESPONSIBLE FOR NOTIFYING ALL UTILITY COMPANIES BEFORE CONSTRUCTION AND VERIFYING LOCATION OF ALL UTILITIES SHOWN OR NOT SHOWN.
4. TREES TO BE DEMOLISHED SHALL BE CLEARED AND GRUBBED. NO BURNING SHALL BE ALLOWED ON OWNERS PROPERTY. ALL TREE AND VEGETATION LOCATIONS ARE APPROXIMATE.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND COST OF THE RELOCATION OF ALL UTILITIES ALONG THE RIGHT OF WAY AND ON THE SITE ASSOCIATED WITH THE CONSTRUCTION OF THIS PROJECT, SUCH AS, BUT NOT LIMITED TO, DRAINAGE STRUCTURES, TRAFFIC SIGNS, UTILITY POLES, GUY WIRES, ETC.
6. CONTRACTOR SHALL MAINTAIN SITE SECURITY BY CONTRACTOR'S OWN MEANS AND METHODS. ALL WORK, INCLUDING MATERIAL STORAGE, SHALL BE KEPT WITHIN THE SECURED AREA. CONTRACTOR SHALL RESTORE THE CONSTRUCTION AREA TO A CONDITION ACCEPTABLE TO THE OWNER.
7. ALL UTILITY WORK & MATERIALS SHALL MEET THE STANDARDS AND SPECIFICATIONS OF THE PERTINENT UTILITY.
8. DEMOLITION OF ANY/ALL CONCRETE AND/OR ASPHALT SIDEWALKS, DRIVEWAYS, ETC. SHALL INCLUDE CLEAN CUTS AT LOCATIONS ABUTTING SIDEWALKS AND/OR DRIVEWAYS THAT ARE TO REMAIN IN PLACE. 1
9. CONTRACTOR SHALL BE REQUIRED TO OBTAIN ALL PERMITS NECESSARY TO PERFORM THE WORK. PERMITS ARE AT NO COST TO THE CONTRACTOR.
10. CONTRACTOR IS RESPONSIBLE FOR ALL TRAFFIC CONTROL, WHICH SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION, AND THE REQUIREMENTS OF THE CITY OF MOBILE.
11. CONTRACTOR IS RESPONSIBLE FOR CONTROLLING DUST FROM THE PROJECT SO THAT IT DOES NOT POSE A HAZARD TO PEDESTRIAN AND VEHICLE TRAFFIC OR TO THE SURROUNDING BUILDING ENVIRONMENT.
12. UNLESS OTHERWISE NOTED, ALL UTILITIES OUTSIDE THE PROPERTY LINE ARE TO REMAIN AND FUNCTION THROUGHOUT THE DEMOLITION PROCESS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD LOCATING ANY SUCH UTILITIES PRIOR TO BEGINNING DEMOLITION.

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SARCOR

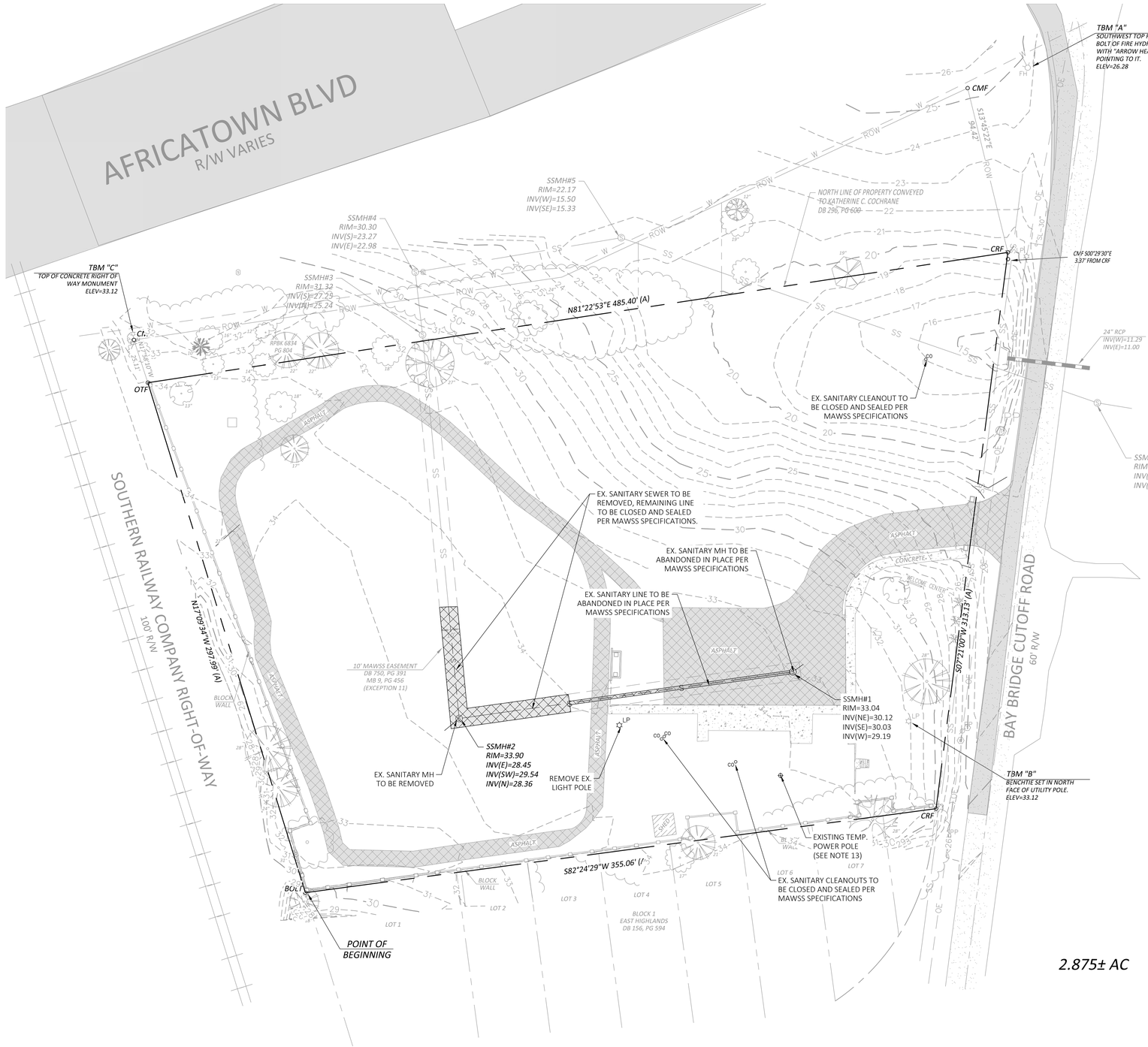
SHEET TITLE

EXISTING CONDITIONS / SITE DEMOLITION PLAN

SHEET NUMBER

C200

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9. CONTRACTOR SHALL BE REQUIRED TO OBTAIN ALL PERMITS NECESSARY TO PERFORM THE WORK. PERMITS ARE AT NO COST TO THE CONTRACTOR.
10. CONTRACTOR IS RESPONSIBLE FOR ALL TRAFFIC CONTROL, WHICH SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION, AND THE REQUIREMENTS OF THE CITY OF MOBILE.
11. CONTRACTOR IS RESPONSIBLE FOR CONTROLLING DUST FROM THE PROJECT SO THAT IT DOES NOT POSE A HAZARD TO PEDESTRIAN AND VEHICLE TRAFFIC OR TO THE SURROUNDING BUILDING ENVIRONMENT.
12. UNLESS OTHERWISE NOTED, ALL UTILITIES OUTSIDE THE PROPERTY LINE ARE TO REMAIN AND FUNCTION THROUGHOUT THE DEMOLITION PROCESS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD LOCATING ANY SUCH UTILITIES PRIOR TO BEGINNING DEMOLITION.
13. IF EXISTING TEMPORARY POWER POLE IS SERVICEABLE, OR CAN BE MADE SO, AS DETERMINED BY THE OWNER, CONTRACTOR, AND UTILITY PROVIDER, THE POLE MAY REMAIN IN PLACE FOR THE CONTRACTOR'S USE DURING THE WORK, AND REMOVED AT THE COMPLETION OF THE PROJECT. IF THE POLE IS NOT SERVICEABLE, THEN IT IS TO BE REMOVED.

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AFRICATOWN WELCOME CENTER

City of Mobile - Africatown Welcome Center 1959
1959 Bay Bridge Cutoff Road
Mobile, Alabama 36610

ALABAMA LICENSED No. 32428 PROFESSIONAL ENGINEER JEFFREY V. HAVERCROFT 10/27/23

DATE	REV	REVISIONS DESCRIPTION
10/23/23		90% CD SUBMITTAL
10/27/23		100% CD SUBMITTAL
11/27/23	1	REVISE DEMO NOTES, DRAINAGE CALLOUTS
01/02/24	2	CoM LD PERMIT REVIEW (REVISED GRADING / DRAINAGE AND EROSION CONTROL PLANS)

Date: 10/27/23
Designed By: Jeffrey Havercroft
Drawn By: Jeffrey Havercroft
Checked By: Gokmen Pacali
Profession: CIVIL
Project Architect: Andrew Marascia
M.M.A. Project Number: 502100720

SARCOR

SHEET TITLE

UTILITIES DEMOLITION PLAN

SHEET NUMBER

C201

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0 30 60 Feet

SITE NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PLANS AND SITE WORK SPECIFICATIONS AND SHALL COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES.
2. REFERENCE ARCHITECTURAL PLANS FOR BUILDING DIMENSIONS, STEPS, TRANSFORMER PADS, ADDITIONAL SITEWORK, ALTERNATE INFORMATION, etc.
3. TOPOGRAPHIC BOUNDARY SURVEY, PROPERTY LINES, LEGAL DESCRIPTION, EXISTING UTILITIES, SITE TOPOGRAPHY WITH SPOT ELEVATIONS, OUTSTANDING PHYSICAL FEATURES, AND EXISTING STRUCTURE LOCATIONS WAS PROVIDED BY WATTIER SURVEYING, INC. SARCOR, LLC. IS NOT RESPONSIBLE FOR THE ACCURACY.
4. ALL DIMENSIONS AND RADII ARE TO THE FACE OF THE CURB UNLESS OTHERWISE NOTED. ALL DIMENSIONS SHOWN TO THE BUILDINGS ARE TO THE OUTSIDE FACE OF BUILDING.
5. ALL HANDICAP ACCESSIBLE PARKING SIGNS AND STRIPING SHALL BE IN ACCORDANCE WITH THE AMERICANS WITH DISABILITY ACT (ADA) REQUIREMENTS AND STATE AND LOCAL CODE.
6. ALL TRAFFIC SIGNS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND ALABAMA DEPARTMENT OF TRANSPORTATION STANDARD AND SPECIAL DRAWINGS.
7. ALL STRIPED AND CURBED RADII SHALL BE 5' UNLESS OTHERWISE NOTED.
8. THE CONTRACTOR IS RESPONSIBLE FOR REPAIR OF ANY DAMAGE TO ANY EXISTING IMPROVEMENTS, ONSITE OR OFF SITE, SUCH AS PAVEMENT, UTILITIES, STORM DRAINAGE, etc. THE REPAIR MUST BE APPROVED BY THE ENGINEER AND BE EQUAL OR BETTER THAN EXISTING CONDITIONS.
9. CONTRACTOR SHALL OBTAIN ALL PERMITS BEFORE CONSTRUCTION BEGINS.
10. SITE CONTRACTOR SHALL SUPPLY AS-BUILT PLANS INDICATING ALL CHANGES AND DEVIATIONS.
11. ANY DEVIATION FROM THESE PLANS MAY CAUSE THE WORK TO BE UNACCEPTABLE.
12. ANY UNANTICIPATED CONDITIONS ENCOUNTERED DURING THE CONSTRUCTION PROCESS SHALL BE IDENTIFIED AND THE ENGINEER NOTIFIED IMMEDIATELY.
13. CONCRETE USED FOR SIDEWALK AND CONCRETE PADS SHALL BE 3,000 PSI 28 DAY COMPRESSIVE STRENGTH. CONCRETE USED FOR CONCRETE APRONS/DRIVEWAYS SHALL BE 4,000 PSI 28 DAY COMPRESSIVE STRENGTH.
14. PROJECT SIGNAGE SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
15. ALL CURB AND GUTTER WITHIN THE DEVELOPMENT SHALL BE 18".
16. PARKING LOT STRIPING SHALL BE INCLUDED IN THE PAVING CONTRACTOR'S SCOPE OF WORK. STRIPING WILL BE ACCORDING TO OWNER'S SPECIFICATION UNLESS NOTED OTHERWISE. ALL STRIPING IS TO HAVE TWO (2) COATS OF PAINT (MIN).
17. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY AND ALL OFF SITE EASEMENTS NOT DELINEATED ON THE PLANS OR KNOWN OF AT TIME OF PLAN ISSUANCE.
18. THE SITE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL WORK AND APPURTENANCE TO WITHIN 5' OF THE BUILDING. THIS INCLUDES TRANSFORMER AND DUMPSTER PADS AS WELL AS UTILITY CONDUITS.

PARKING SUMMARY	
STANDARD SPACES (9' X 18')	39
ADA SPACES	4
TOTAL	43
BUS SPACES (14' X 75')	3

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ALABAMA LICENSED No. 32428 PROFESSIONAL ENGINEER JEFFREY V. HAVERCROFT 10/27/23

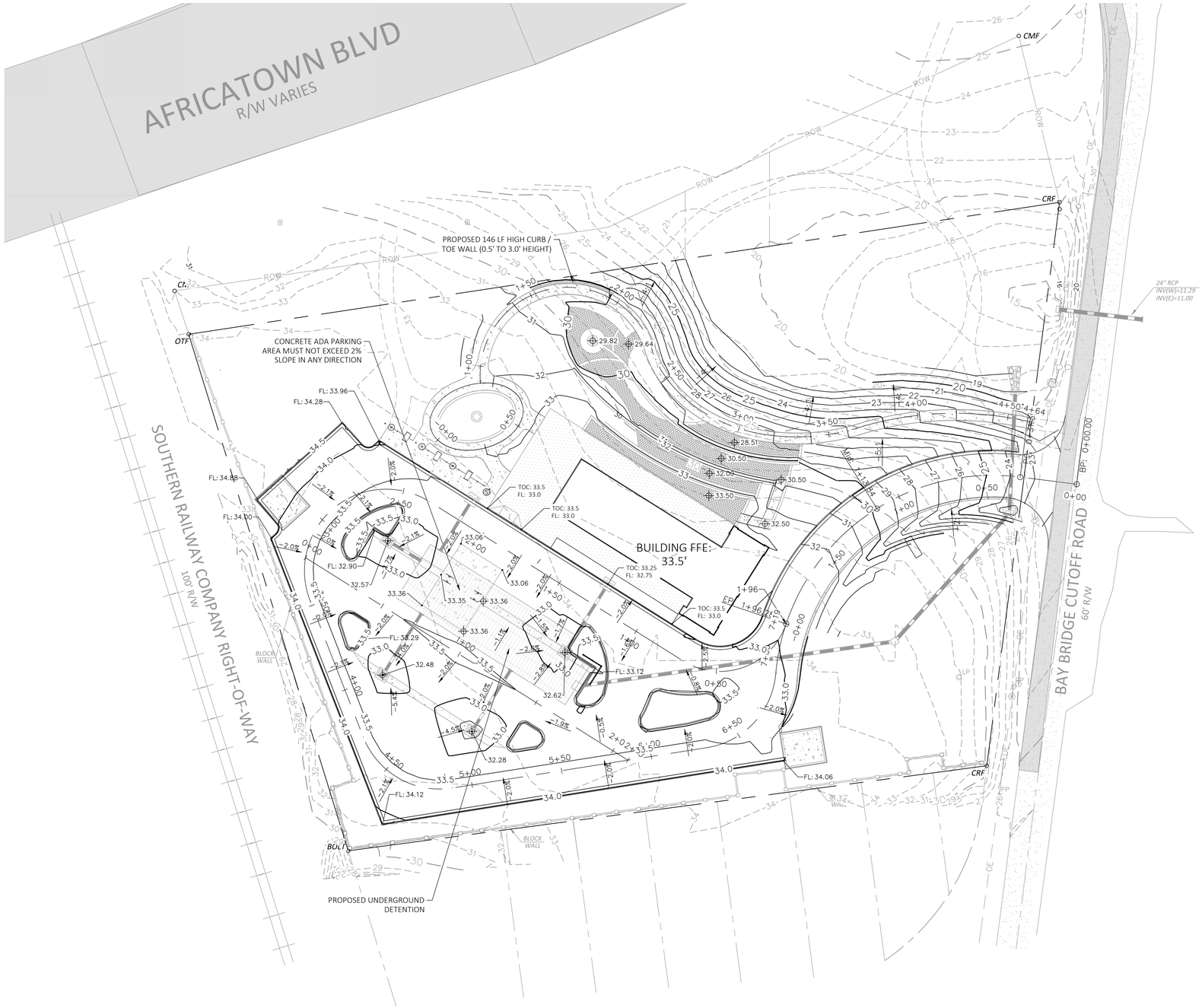
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Date: 10/27/23
Designed By: Jeffrey Havercroft
Drawn By: Jeffrey Havercroft
Checked By: Gökmen Pacal
Profession: CIVIL
Project Architect: Andrew Marasca
M.M.A. Project Number: 502100720

SHEET TITLE
SITE PLAN

SHEET NUMBER
C300

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GRADING NOTES

1. ALL SPOT ELEVATIONS ARE TOP OF PAVEMENT / FINISHED GRADE UNLESS OTHERWISE NOTED.
2. INFORMATION CONCERNING SITE SOIL CONDITIONS IS CONTAINED IN THE GEOTECHNICAL REPORT DATED OCTOBER 23, 2023 BY GEOTECHNICAL ENGINEERING-TESTING, INC. THE CONTRACTOR IS TO REFER TO THE GEOTECHNICAL REPORT RECOMMENDATIONS CONCERNING SELECT FILL PLACEMENT AND COMPACTION.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL OF ALL DEBRIS NOT ACCEPTABLE TO THE OWNER AND ENGINEER.
4. IF CONTRACTOR DOES NOT ACCEPT EXISTING TOPOGRAPHY AS SHOWN ON THE PLANS, WITHOUT EXCEPTION, THE CONTRACTOR SHALL MAKE A TOPOGRAPHIC SURVEY AT THEIR OWN EXPENSE AND SUBMIT IT TO THE OWNER FOR REVIEW.
5. CONTRACTOR IS RESPONSIBLE FOR NOTIFYING ALL UTILITIES BEFORE CONSTRUCTION AND VERIFYING LOCATION OF ALL UTILITIES SHOWN OR NOT SHOWN.
6. CONTRACTOR SHALL PROVIDE DRAINAGE AWAY FROM THE BUILDINGS.
7. PRECAST STRUCTURES MAY BE USED AT THE CONTRACTORS OPTION.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND COST OF THE RELOCATION OF ALL UTILITIES ALONG THE RIGHT OF WAY AND ON THE SITE ASSOCIATED WITH THE CONSTRUCTION OF THIS PROJECT, SUCH AS, BUT NOT LIMITED TO SIGNAL POLES, SIGNAL CONTROLS, DRAINAGE STRUCTURES, TRAFFIC SIGNS, UTILITY POLES, GUY WIRES, AND ETC.
9. THE EARTHWORK FOR ALL BUILDING FOUNDATIONS AND SLABS SHALL BE IN ACCORDANCE WITH ARCHITECTURAL PLANS AND SPECIFICATIONS.
10. CONTRACTOR IS RESPONSIBLE FOR REPAIRS OF DAMAGE TO ANY EXISTING IMPROVEMENTS DURING CONSTRUCTION, SUCH AS BUT NOT LIMITED TO, DRAINAGE, UTILITIES, PAVEMENT, STRIPING, CURBS, ETC. REPAIRS SHALL BE EQUAL TO OR BETTER THAN EXISTING CONDITIONS.
11. ALL SLOPES AND DISTURBED AREAS NOT COVERED BY BUILDING OR PAVEMENT SHALL BE GRADED SMOOTH AND RECEIVE 4" OF TOPSOIL. CONTRACTOR TO PROVIDE TOPSOIL IF NOT AVAILABLE ON SITE. THE AREAS SHALL BE SEEDED, MULCHED, FERTILIZED, AND WATERED TO PROVIDE A HEARTY MOWABLE STAND OF GRASS. SMALL ROCKS MUST BE REMOVED. ANY AREA DISTURBED FOR ANY REASON PRIOR TO FINAL ACCEPTANCE OF THE PROJECT SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
12. SPOIL FROM THE FOOTINGS IS THE SITE CONTRACTOR'S RESPONSIBILITY. CONTRACTOR IS TO USE THE SOIL ON SITE OR REMOVE IT FROM THE SITE.
13. EARTHWORK SHALL BE ON AN UNCLASSIFIED BASIS.

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3. ANY FILL USED TO INCREASE THE ELEVATION OF THE FLOOR SLAB OR ANY FILL USED AS BACKFILL, SHALL BE CLEAN, GRANULAR MATERIAL. PRIOR TO THE USE OF ANY GRANULAR FILL, GRADATION ANALYSIS SHALL BE PERFORMED ON REPRESENTATIVE SAMPLES OF THE FILL MATERIAL TO DETERMINE WHETHER THE MATERIAL IS SUITABLE AS FILL. COMPACTED FILL SHALL BE PLACED IN LAYERS OF NOT MORE THAN EIGHT INCHES THICKNESS, AT MOISTURE CONTENTS WITHIN TWO PERCENT OPTIMUM, AND COMPACTED TO MINIMUM DENSITY OF 98 PERCENT OF ITS STANDARD PROCTOR (ASTM D 698) MAX DRY DENSITY.
4. CONTRACTOR IS REQUIRED TO DO ITS OWN TESTING ON MATERIAL AND COMPACTION.
5. ALL SYSTEM MANHOLES AND PIPES ARE TO BE FLUSHED CLEAN PRIOR TO TURNING OVER TO THE OWNER.
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7. STORM PIPE WITHIN DEVELOPMENT SHALL BE 18" RCP. ROOF DRAIN LINES SHALL DISCHARGE INTO A SURFACE GRADE OUTFALL AREA AS SHOWN IN DETAIL DRAWINGS.
8. PRECAST STRUCTURES MAY BE USED AT THE CONTRACTOR'S OPTION.

2

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ALABAMA LICENSED No. 32428 PROFESSIONAL ENGINEER JEFFREY V. HAVERCROFT 10/27/23

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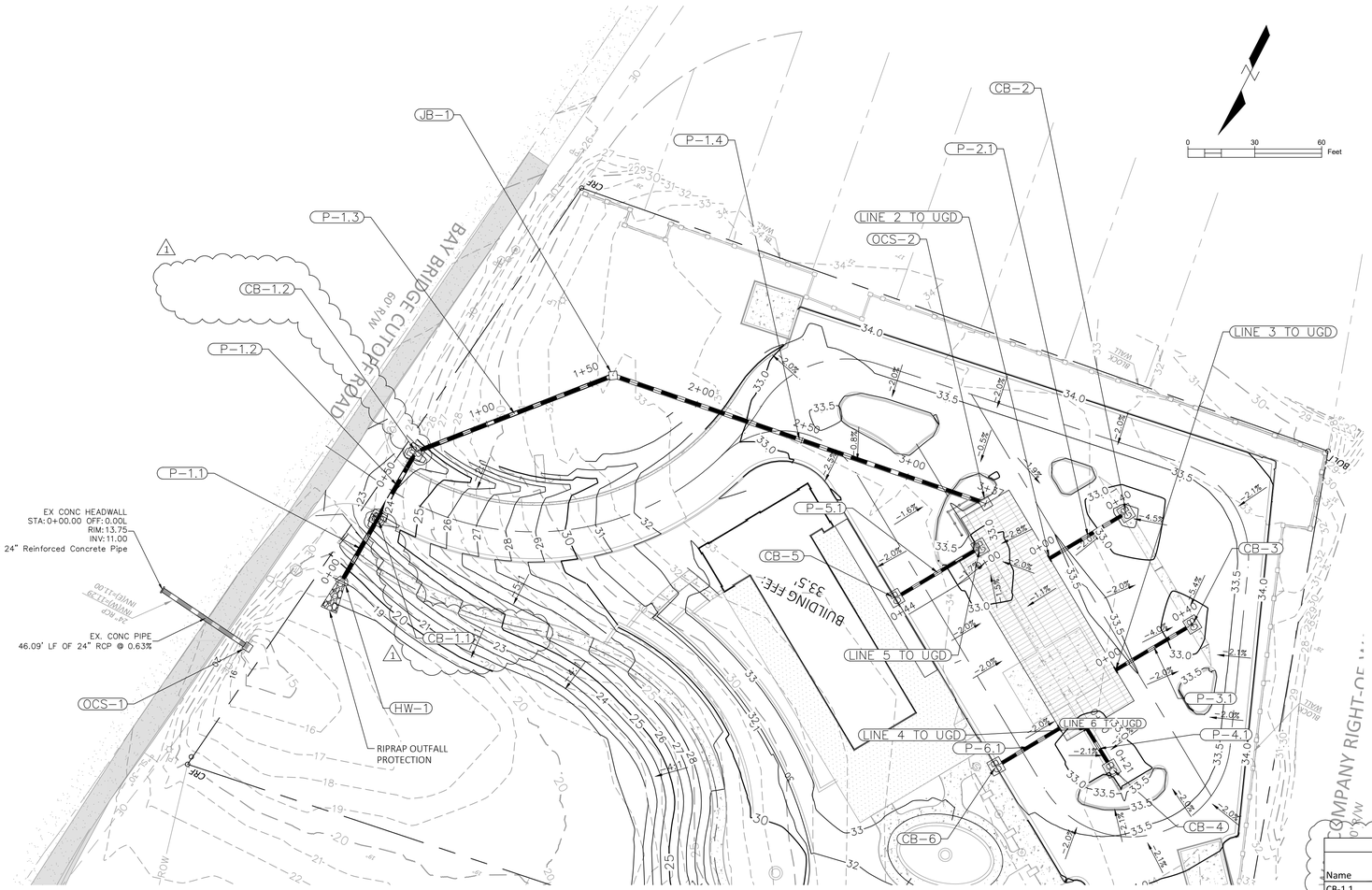
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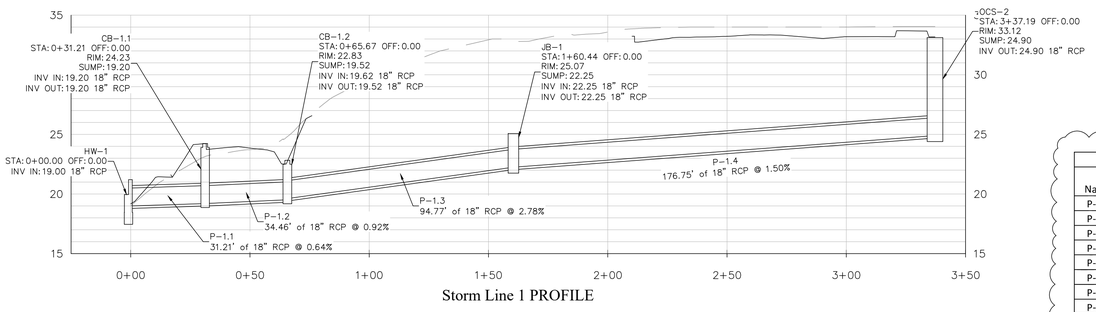
SARCOR

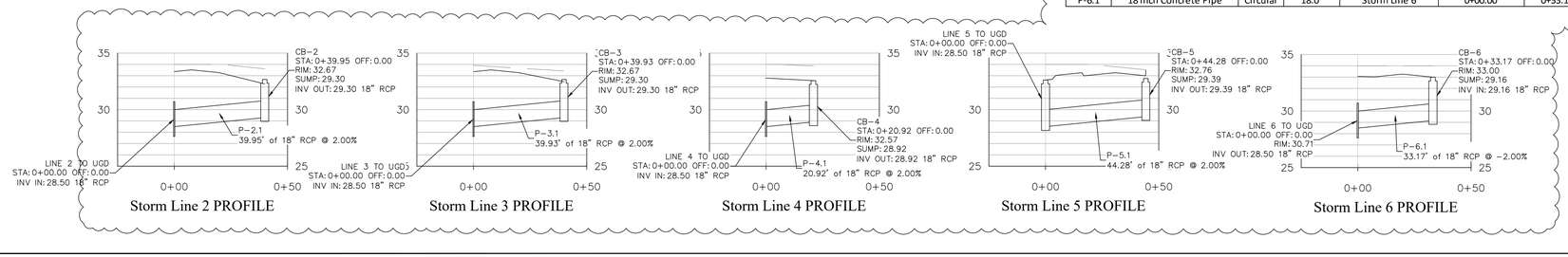
SHEET TITLE
GRADING PLAN

SHEET NUMBER
C400

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2

STRUCTURES

Name	Description	Reference Alignment	Station	Offset	Connected Pipes
CB-1.1	36 x 36 Rect Structure 24 x 24 Frm	Storm Line 1	0+31.21'	0.00'	2
CB-1.2	36 x 36 Rect Structure 24 x 24 Frm	Storm Line 1	0+65.67'	0.00'	2
HW-1	38 x 12 x 45 inch Concrete Rectangular Winged Headwall	Storm Line 1	0+00.00'	0.00'	1
JB-1	36 x 36 inch Rectangular Structure	Storm Line 1	1+60.44'	0.00'	2
OCS-2	48 x 48 inch Rectangular Structure	Storm Line 1	3+37.19'	0.00'	1
LINE 2 TO UGD	Connection to UGD	Storm Line 2	0+00.00'	0.00'	1
CB-2	36 x 36 Rect Structure 24 x 24 Frm	Storm Line 2	0+39.95'	0.00'	1
LINE 3 TO UGD	Connection to UGD	Storm Line 3	0+00.00'	0.00'	1
CB-3	36 x 36 Rect Structure 24 x 24 Frm	Storm Line 3	0+39.93'	0.00'	1
LINE 4 TO UGD	Connection to UGD	Storm Line 4	0+00.00'	0.00'	1
CB-4	36 x 36 Rect Structure 24 x 24 Frm	Storm Line 4	0+20.92'	0.00'	1
LINE 5 TO UGD	Connection to UGD	Storm Line 5	0+00.00'	0.00'	1
CB-5	36 x 36 Rect Structure 24 x 24 Frm	Storm Line 5	0+44.28'	0.00'	1
LINE 6 TO UGD	Connection to UGD	Storm Line 6	0+00.00'	0.00'	1
CB-6	36 x 36 Rect Structure 24 x 24 Frm	Storm Line 6	0+33.17'	0.00'	1

PIPES

Name	Description	Shape	Inner Diameter	Reference Alignment	Start Station	End Station	Slope (Hold Start)	Slope	Start Structure	Start Invert Elevation	End Structure	End Invert Elevation	2D Length	Bearing
P-1.1	18 inch Concrete Pipe	Circular	18.0"	Storm Line 1	0+00.00'	0+31.21'	0.64%	0.64%	HW-1	19.00'	CB-1.1	19.20'	31.21'	S2° 46' 59"W
P-1.2	18 inch Concrete Pipe	Circular	18.0"	Storm Line 1	0+31.21'	0+65.67'	0.92%	0.92%	CB-1.1	19.20'	CB-1.2	19.52'	34.46'	S2° 51' 54"W
P-1.3	18 inch Concrete Pipe	Circular	18.0"	Storm Line 1	0+65.67'	1+60.44'	2.78%	2.78%	CB-1.2	19.62'	JB-1	22.25'	94.77'	S41° 50' 01"W
P-1.4	18 inch Concrete Pipe	Circular	18.0"	Storm Line 1	1+60.44'	3+37.19'	1.50%	1.50%	JB-1	22.25'	OCS-2	24.90'	176.75'	S81° 57' 08"W
P-2.1	18 inch Concrete Pipe	Circular	18.0"	Storm Line 2	0+00.00'	0+39.95'	2.00%	2.00%	LINE 2 TO UGD	28.50'	CB-2	29.30'	39.95'	S32° 17' 24"W
P-3.1	18 inch Concrete Pipe	Circular	18.0"	Storm Line 3	0+00.00'	0+39.93'	2.00%	2.00%	LINE 3 TO UGD	28.50'	CB-3	29.30'	39.93'	S32° 17' 24"W
P-4.1	18 inch Concrete Pipe	Circular	18.0"	Storm Line 4	0+00.00'	0+20.92'	2.00%	2.00%	LINE 4 TO UGD	28.50'	CB-4	28.92'	20.92'	N58° 40' 51"W
P-5.1	18 inch Concrete Pipe	Circular	18.0"	Storm Line 5	0+00.00'	0+44.28'	2.00%	2.00%	LINE 5 TO UGD	28.50'	CB-5	29.39'	44.28'	N32° 08' 13"E
P-6.1	18 inch Concrete Pipe	Circular	18.0"	Storm Line 6	0+00.00'	0+33.17'	2.00%	-2.00%	LINE 6 TO UGD	28.50'	CB-6	29.16'	33.17'	N32° 04' 28"E

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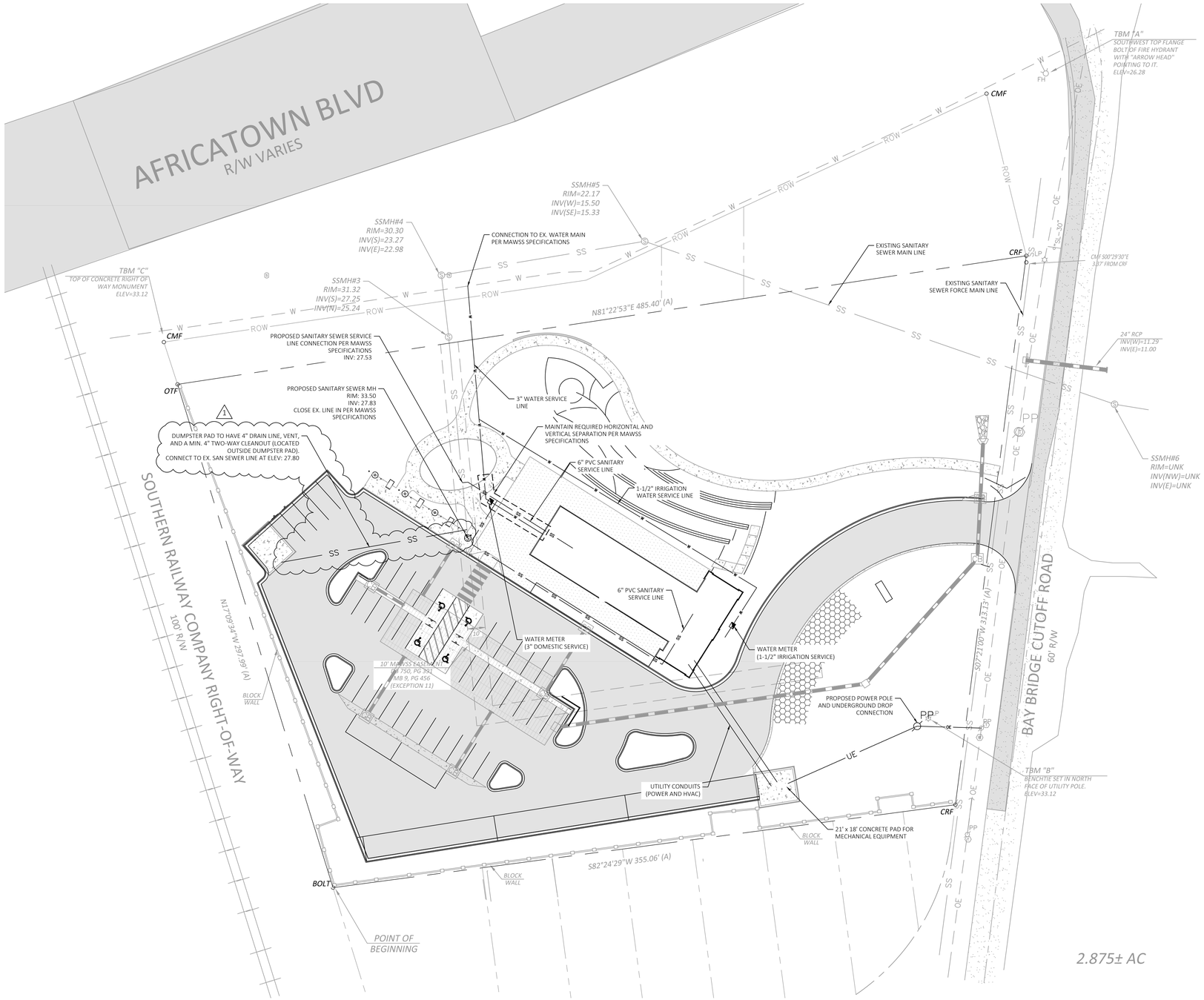
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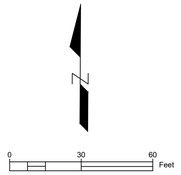
SARCOR

SHEET TITLE
DRAINAGE PLAN

SHEET NUMBER
C401

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UTILITY NOTES

1. MOBILE AREA WATER AND SEWER SYSTEM (MAWSS) STANDARD SPECIFICATIONS AND DETAILS SHALL GOVERN ALL WATER AND SANITARY SEWER MAIN CONSTRUCTION.
2. THE BUILDING CONTRACTOR IS RESPONSIBLE FOR COORDINATING LOCATION, SIZE AND SPECIFICATIONS OF ALL ELECTRICAL TRANSFORMER PADS WITH THE LOCAL POWER COMPANY AND PROVIDING SERVICE FROM THE TRANSFORMER TO THE BUILDING.
3. CONTRACTOR SHALL COORDINATE ANY DISRUPTIONS TO EXISTING UTILITY SERVICES WITH ADJACENT PROPERTY OWNERS AND IS RESPONSIBLE FOR REPAIRS OF DAMAGE TO ANY EXISTING UTILITIES DURING CONSTRUCTION AT NO COST TO THE OWNER.
4. CONTRACTOR SHALL COMPLY WITH THE LATEST STANDARDS, DIRECTIVES, OR PERFORMANCE CRITERIA OF OSHA, OR ANY OTHER AGENCY HAVING JURISDICTION FOR EXCAVATION AND TRENCHING PROCEDURES. THE CONTRACTOR SHALL PROVIDE SUPPORT SYSTEMS, SLOPING, BENCHING, AND OTHER MEANS OF PROTECTION. THIS IS TO INCLUDE, BUT IS NOT LIMITED TO, ACCESS AND EGRESS FROM ALL EXCAVATION AND TRENCHING.
5. SEWER SERVICE LATERALS SHALL BE COORDINATED WITH BUILDING PLANS. ANY DISCREPANCIES SHOULD BE CLARIFIED BEFORE INSTALLATION. SEWER SERVICE LATERALS ARE TO BE PERMANENTLY MARKED ON THE CURB.
6. ALL WATER PIPE 4" DIAMETER AND LARGER SHALL BE C900 CLASS 150 PVC WATER PIPE WITH 150 PSI PRESSURE RATING CONFORMING TO AWWA, AND UNIBELL PLASTIC PIPE STANDARD SPECIFICATIONS. FITTINGS 4" AND LARGER SHALL BE CAST IRON OR DUCTILE IRON AND CONFORM WITH WWA STANDARD SPECIFICATIONS.
7. ALL WATER PIPE 3" AND SMALLER SHALL BE TYPE K COPPER OF SDR 21 PER ANSI 16.22.
8. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 4' OVER ALL WATER LINES.
9. CONTRACTOR SHALL COORDINATE INSTALLATION OF WATER SERVICE WITH MAWSS. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION, PURCHASE AND/OR FEES AND PERMITS ASSOCIATED WITH ALL APPARATUS INCLUDING; WATER METERS, BACK FLOW PREVENTERS, POST INDICATOR VALVES, AND ENCLOSURES.
10. EXISTING UTILITIES ARE APPROXIMATE AND SHOULD BE VERIFIED FOR LOCATION AND NUMBERED BY THE CONTRACTOR.
11. ALL ELECTRIC, TELEPHONE, AND GAS LINES, INCLUDING SERVICE LINES ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE APPROPRIATE UTILITY COMPANIES SPECIFICATIONS.
12. CONTRACTOR TO COORDINATE INSTALLATION OF ALL UTILITIES BY OTHERS WITH HIS WORK.
13. PRIMARY ELECTRIC SERVICE IS PROVIDED BY ALABAMA POWER. THIS INCLUDES THE TRANSFORMER AND PAD, TRENCHING, BACKFILL, AND COMPACTION. CONTRACTOR IS RESPONSIBLE FOR COORDINATION AND FEES ASSOCIATED WITH POWER SERVICE AS WELL AS SECONDARY SERVICE.
14. PRIMARY ELECTRIC LINES SHOWN ARE FOR COORDINATION ONLY. EXACT LOCATION WILL BE FIELD DETERMINED DURING CONSTRUCTION.
15. ALL SANITARY MANHOLES AND PIPE ARE TO BE FLUSHED CLEAN OF DEBRIS PRIOR TO TURN OVER OF SYSTEM TO OWNER.
16. ALL EASEMENTS TO BE PLATTED BY THE CONTRACTOR (UNLESS OTHERWISE NOTED).
17. ANY UTILITIES NOT SHOWN THAT REQUIRE RELOCATION OR REMOVAL IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR IS TO REPORT ALL DISCREPANCIES TO THE ENGINEER IMMEDIATELY UPON DISCOVERY.
18. DUMPSTER PAD TO HAVE DRAIN, VENT, AND A MINIMUM OF A 4" TWO-WAY CLEANOUT (LOCATED OUTSIDE PAD) DISCHARGING TO SANITARY SEWER. LOCATE DRAIN TO FRONT OR BACK SIDE. DRAIN NOT TO BE LOCATED UNDER DUMPSTER, FOR CLEANING PURPOSES. DRAIN TO BE AT OR ABOVE MFFE IN FLOOD ZONES (NO DRY FLAT VENT ALLOWED). EXTEND VENT ABOVE ENCLOSURE. 1

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ALABAMA LICENSED PROFESSIONAL ENGINEER
No. 32428
10/27/23
JEFFREY V. HAVERCROFT

REV	DATE	REVISIONS DESCRIPTION
1	04/03/24	CITY OF MOBILE PERMIT REVIEW

Date: 10/27/23
Designed By: Jeffrey Havercroft
Drawn By: Jeffrey Havercroft
Checked By: Gokmen Pacal
Profession: CIVIL
Project Architect: Andrew Marasca
M.M.A. Project Number: 502100720

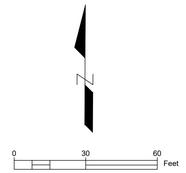
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SHEET TITLE
UTILITY PLAN

SHEET NUMBER
C500

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EROSION & SEDIMENT CONTROL NOTES

1. TEMPORARY SEEDING SHALL BE APPLIED AS SOON AS ANY AREAS OF THE SITE ARE DISTURBED. THE TOP 6" OF SOIL SHALL BE LOOSENED TO ENHANCE THE ROOTING OF SEEDLINGS. ONCE TEMPORARY SEEDING HAS BEEN APPLIED, THE CONTRACTOR SHALL COVER THE SEEDED AREA WITH MULCH MATERIALS. SEE TEMPORARY SEEDING SCHEDULE AND MULCH MATERIALS LISTED IN THE PROJECT CONSTRUCTION BEST MANAGEMENT PRACTICES PLAN (CBMPP).
2. ONCE CLEARING AND GRUBBING IS COMPLETE, AND THE TEMPORARY SEEDING HAS BEGUN TO GERMINATE, THE CONTRACTOR SHALL BEGIN INSTALLING THE PERMANENT SEEDING. SEE PERMANENT SEEDING SCHEDULE IN THE CBMPP.
3. ONCE THE PERMANENT SEEDING HAS BEGUN TO SEED, COVER 70% OF THE SURFACE WITH THE SPECIFIED MULCH MATERIALS LISTED IN THE CBMPP.
4. THE COMBINATION OF TEMPORARY SEEDING, FOLLOWED BY PERMANENT SEEDING AND MULCH, WILL COMPLETELY STABILIZE THE SITE. THE CONTRACTOR IS RESPONSIBLE FOR COMPLETE STABILIZATION WITHIN 14 DAYS OF STOPPING WORK IN ANY AREA. THEREFORE, THE SEEDING PROCESS SHALL BEGIN AS SOON AS AN AREA HAS BEEN DISTURBED.
5. TYPE A SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITY AND SHALL REMAIN UNTIL SUBSTANTIAL COMPLETION. THE INTERIOR SILT FENCING SHALL BE INSTALLED AFTER SLOPE CLEARING AND MULCHING ARE COMPLETE.
6. THE EROSION AND SEDIMENT BMPs ARE TO BE REGULARLY INSPECTED BY THE QCP, OR A QUALIFIED REPRESENTATIVE TO THE OWNER, AFTER 0.75" RAIN WITHIN 24 HRS, OR MONTHLY.
7. ADEM GENERAL PERMIT HAS NOT BEEN OBTAINED BY THE OWNER. PRIOR TO THE NOTICE TO PROCEED, THE CONTRACTOR SHALL FILE A GENERAL PERMIT WITH ADEM AS THE RESPONSIBLE OFFICIAL. THE CONTRACTOR IS RESPONSIBLE FOR ALL PERMIT FEES AND INSPECTION SERVICE REQUESTED BY ADEM.
8. SILT FENCING, TREE PROTECTION FENCING, AND INLET PROTECTION SHALL BE REMOVED AFTER SITE STABILIZATION AND PRIOR TO SUBSTANTIAL COMPLETION.

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ALABAMA LICENSED PROFESSIONAL ENGINEER
No. 32428
10/27/2023
JEFFREY V. HAVERCROFT

REV	DATE	REVISIONS DESCRIPTION
	10/23/23	90% CD SUBMITTAL
	10/27/23	100% CD SUBMITTAL
1	11/27/23	REVISE DEMO NOTES, DRAINAGE CALLOUTS
2	01/02/24	CoM LD PERMIT REVIEW (REVISED GRADING / DRAINAGE AND EROSION CONTROL PLANS)

Date: 10/27/23
Designed By: Jeffrey Havercroft
Drawn By: Jeffrey Havercroft
Checked By: Gokmen Pacal
Profession: CIVIL
Project Architect: Andrew Marasca
M.M.A. Project Number: 502100720

SARCOR

SHEET TITLE

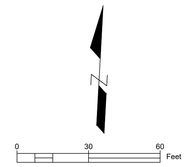
EROSION CONTROL PLAN (INITIAL)

SHEET NUMBER

C600

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3. ONCE THE PERMANENT SEEDING HAS BEGUN TO SEED, COVER 70% OF THE SURFACE WITH THE SPECIFIED MULCH MATERIALS LISTED ON THIS SHEET.
4. THE COMBINATION OF TEMPORARY SEEDING, FOLLOWED BY PERMANENT SEEDING AND MULCH, WILL COMPLETELY STABILIZE THE SITE. THE CONTRACTOR IS RESPONSIBLE FOR COMPLETE STABILIZATION WITHIN 14 DAYS OF STOPPING WORK IN ANY AREA. THEREFORE, THE SEEDING PROCESS SHALL BEGIN AS SOON AS AN AREA HAS BEEN DISTURBED.
5. TYPE A SILT FENCE SHALL BE INSTALLED ON DAY 1 AROUND THE LIMITS OF DISTURBANCE AND REMAIN UNTIL SUBSTANTIAL COMPLETION. THE INTERIOR SILT FENCING SHALL BE INSTALLED AFTER SLOPE CLEARING AND MULCHING ARE COMPLETE.
6. THE EROSION AND SEDIMENT BMPs ARE TO BE REGULARLY INSPECTED BY THE QCP, OR A QUALIFIED REPRESENTATIVE TO THE OWNER, AFTER 0.25" RAIN (WITHIN 24 HRS) OR MONTHLY.
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REV	DATE	REVISIONS DESCRIPTION
	10/23/23	90% CD SUBMITTAL
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Designed By: Jeffrey Havercroft
Drawn By: Jeffrey Havercroft
Checked By: Gokmen Pacal
Profession: CIVIL
Project Architect: Andrew Marrasca
M.M.A. Project Number: 502100720

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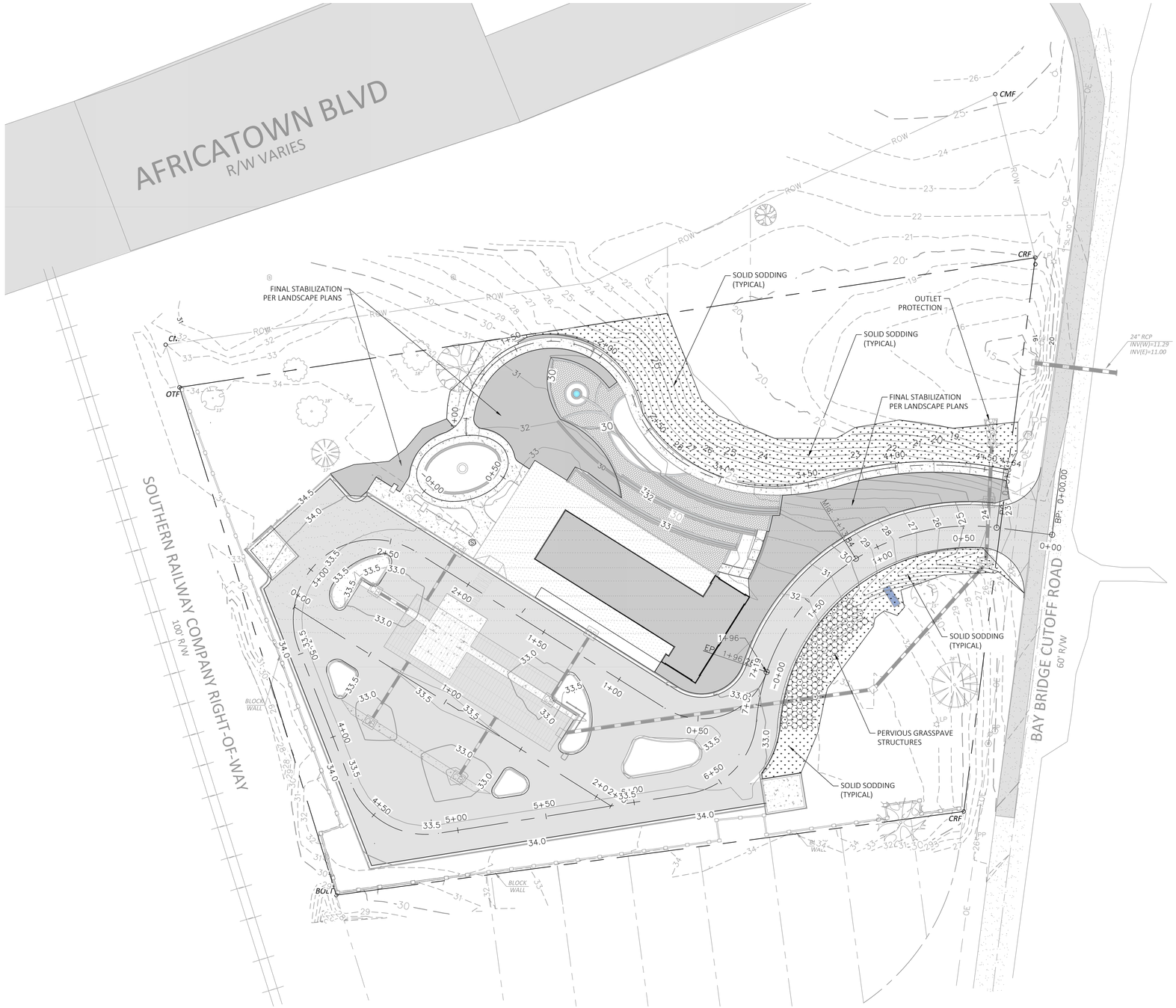
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EROSION CONTROL PLAN (CONSTRUCTION)

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C601

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REV	DATE	REVISIONS DESCRIPTION
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1	11/27/23	REVISE DEMO NOTES, DRAINAGE CALLOUTS
2	01/02/24	CoM LD PERMIT REVIEW (REVISED GRADING / DRAINAGE AND EROSION CONTROL PLANS)

Date: 10/27/23
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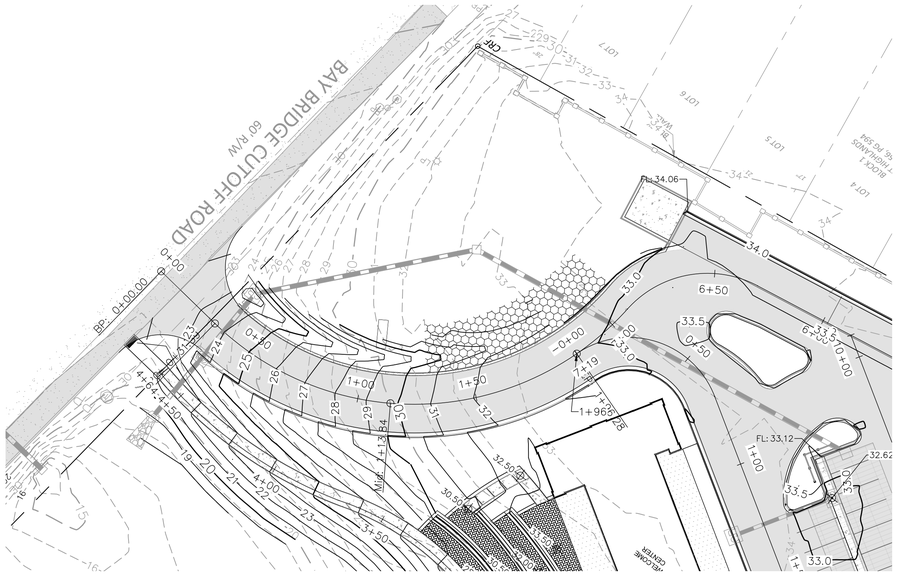
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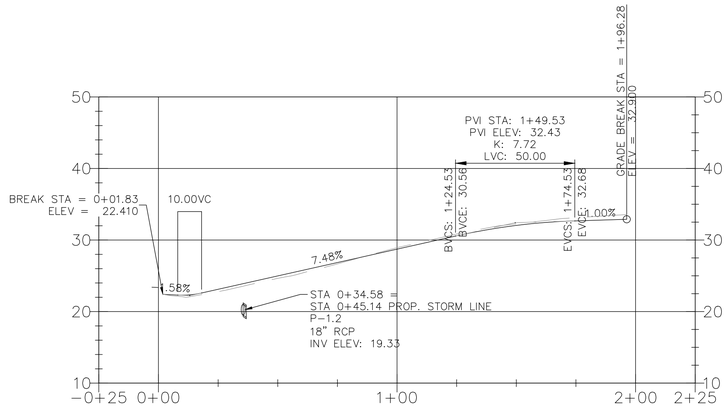
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SHEET TITLE
EROSION CONTROL PLAN (FINAL)

SHEET NUMBER
C602

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DRIVEWAY PROFILE

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ALABAMA LICENSED No. 32428 PROFESSIONAL ENGINEER JEFFREY V. HAVERCROFT 10/27/23

DATE	REV	REVISIONS DESCRIPTION
10/23/23		90% CD SUBMITTAL
10/27/23		100% CD SUBMITTAL
11/27/23	1	REVISE DEMO NOTES, DRAINAGE CALLOUTS
01/02/24	2	CoM LD PERMIT REVIEW (REVISED GRADING / DRAINAGE AND EROSION CONTROL PLANS)

Date: 10/27/23
Designed By: Jeffrey Havercroft
Drawn By: Jeffrey Havercroft
Checked By: Gokmen Pacal
Profession: CIVIL
Project Architect: Andrew Marasca
M.M.A. Project Number: 502100720

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SHEET TITLE

DRIVEWAY PLAN / PROFILE

SHEET NUMBER

C700

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ALABAMA LICENSED No. 32428 PROFESSIONAL ENGINEER JEFFREY V. HAVERCROFT 10/27/23

REV	DATE	REVISIONS DESCRIPTION
	10/23/23	90% CD SUBMITTAL
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1	11/27/23	REVISE DEMO NOTES, DRAINAGE CALLOUTS
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Profession: CIVIL
Project Architect: Andrew Marrasca
M.M.A. Project Number: 502100720

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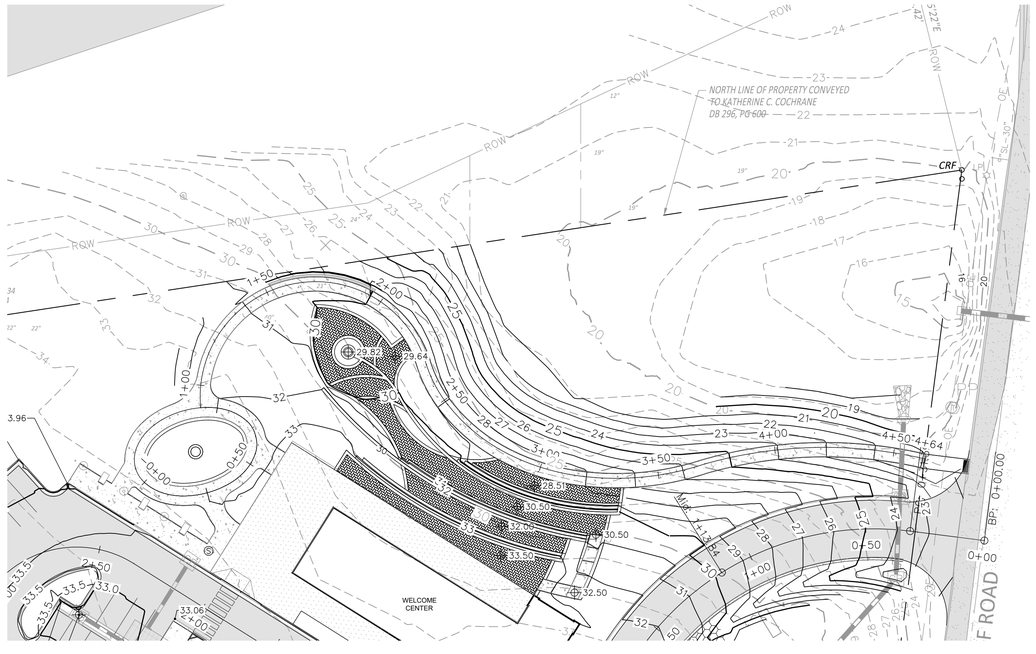
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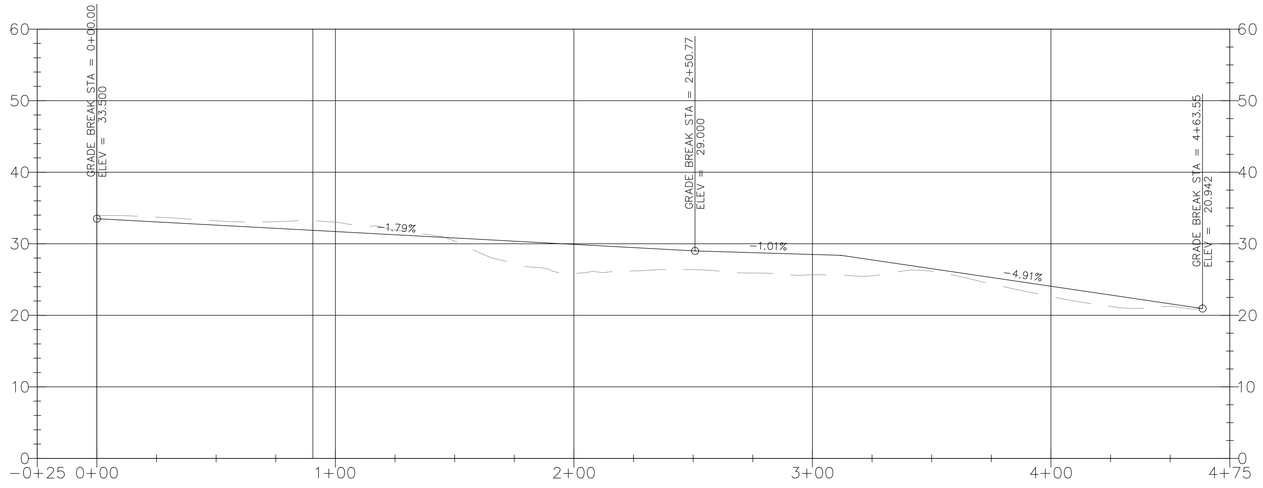
DRIVEWAY CROSS SECTIONS

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C701

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Connector Path PROFILE

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ALABAMA LICENSED No. 32428 PROFESSIONAL ENGINEER JEFFREY V. HAVERCROFT
10/27/23

DATE	REV	REVISIONS DESCRIPTION
10/23/23		90% CD SUBMITTAL
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Drawn By: Jeffrey Havercroft
Checked By: Gokmen Pacal
Profession: CIVIL
Project Architect: Andrew Marasca
M.M.A. Project Number: 502100720

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SHEET TITLE

TRAIL PLAN / PROFILE

SHEET NUMBER

C702

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10/27/23

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	10/23/23	90% CD SUBMITTAL
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Checked By: Gokmen Pacal
Profession: CIVIL
Project Architect: Andrew Marasca
M.M.A. Project Number: 502100720

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SHEET TITLE

TRAIL CROSS SECTIONS

SHEET NUMBER

C703

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3+25.00

3+00.00

2+75.00

2+50.00

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4+00.00

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10/27/23

REVISIONS DESCRIPTION	REV	DATE
90% CD SUBMITTAL		10/23/23
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REVISE DEMO NOTES, DRAINAGE CALLOUTS	1	11/27/23
CoM LD PERMIT REVIEW (REVISED GRADING / DRAINAGE AND EROSION CONTROL PLANS)	2	01/02/24

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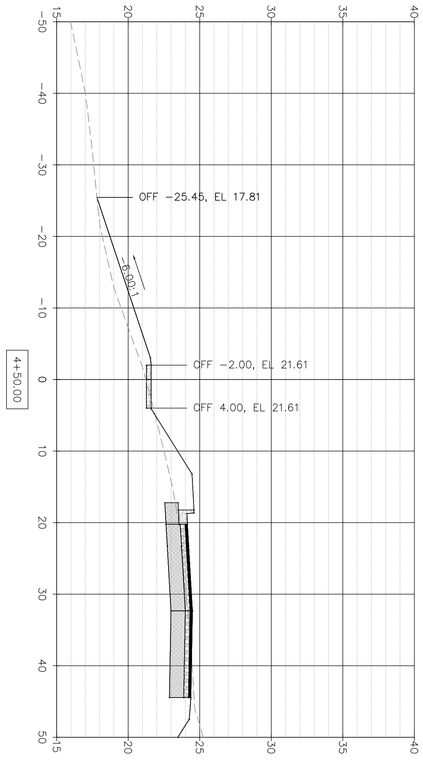
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TRAIL CROSS SECTIONS

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SHEET NUMBER
C705

SHEET TITLE
TRAIL CROSS SECTIONS

SARCOR

Date: 10/27/23
Designed By: Jeffrey Havercroft
Drawn By: Jeffrey Havercroft
Checked By: Gokmen Pacal
Profession: CIVIL
Project Architect: Andrew Marasca
M.M.A. Project Number: 502100720

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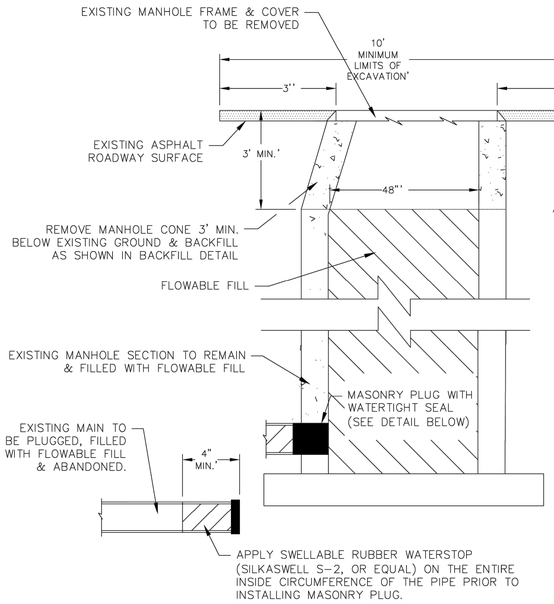
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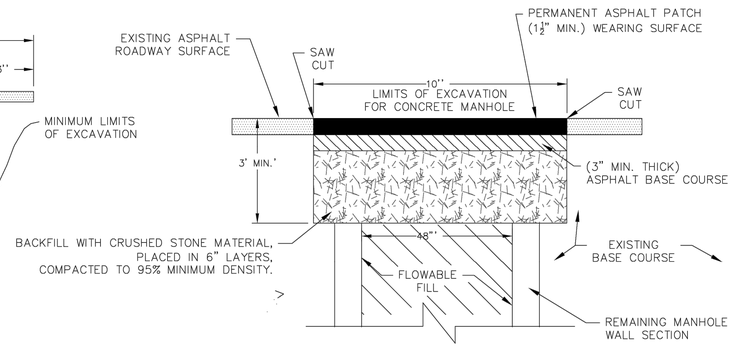
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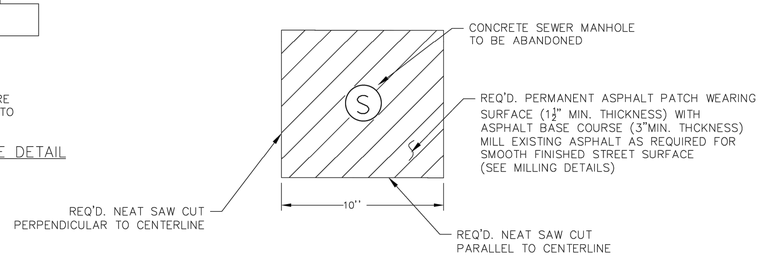


PLUG & ABANDON CONCRETE MANHOLE DETAIL
(ASPHALT STREET)
N.T.S.

- MINIMUM PLUG WIDTH = 1/2 PIPE SIZE DIAMETER
- SIKASWELL S-2, OR EQUAL, WATERTIGHT SEAL BETWEEN PIPE WALL AND MASONRY PLUG SHALL BE PROVIDED.
- THE MANHOLE FRAME, COVER, & TOP 3-FEET OF EXISTING MANHOLE SHALL BE REMOVED. REMAINING MANHOLE SECTION SHALL BE FILLED WITH FLOWABLE FILL.
- AFTER FLOWABLE FILL OBTAINS ADEQUATE HARDNESS, THE EXCAVATED AREA FROM THE TOP OF THE MANHOLE CONE SECTION TO THE EXISTING SURFACE SHALL BE BACKFILLED AND RESTORED TO MATCH THE EXISTING SURFACE CONDITIONS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- WHERE THE MANHOLES TO BE ABANDONED ARE LOCATED IN THE ROADWAY, A PERMANENT ASPHALT PATCH SHALL BE INSTALLED.



BACKFILL AT ABANDON CONCRETE MANHOLE DETAIL
N.T.S.



MANHOLE PERMANENT ASPHALT PATCH DETAIL FOR ABANDONED CONCRETE MANHOLE
N.T.S.

NOTE:

PAVING AND CONSTRUCTION WITHIN THE CITY OF MOBILE RIGHT OF WAY SHALL MEET THE CITY OF MOBILE'S STANDARDS.

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AFRICATOWN WELCOME CENTER

City of Mobile - Africatown Welcome Center 1959
1959 Bay Bridge Cutoff Road
Mobile, Alabama 36610

ALABAMA LICENSED No. 32428 PROFESSIONAL ENGINEER JEFFREY V. HAVERCROFT 10/27/23

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01/02/24	2	CoM LD PERMIT REVIEW (REVISED GRADING / DRAINAGE AND EROSION CONTROL PLANS)

Date: 10/27/23
Designed By: Jeffrey Havercroft
Drawn By: Jeffrey Havercroft
Checked By: Gokmen Pacal
Profession: CIVIL
Project Architect: Andrew Marasca
M.M.A. Project Number: 502100720

SARCOR

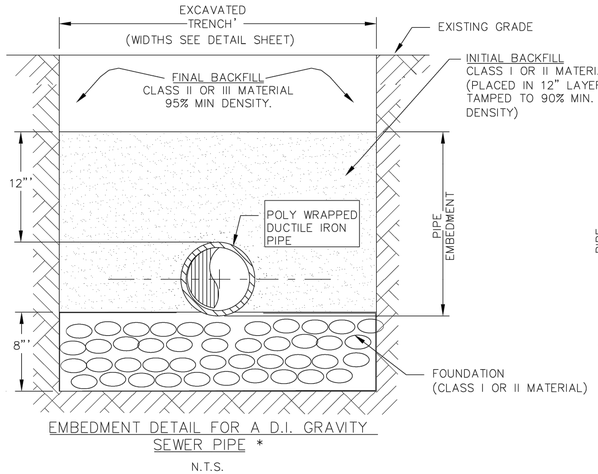
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DETAIL DRAWINGS

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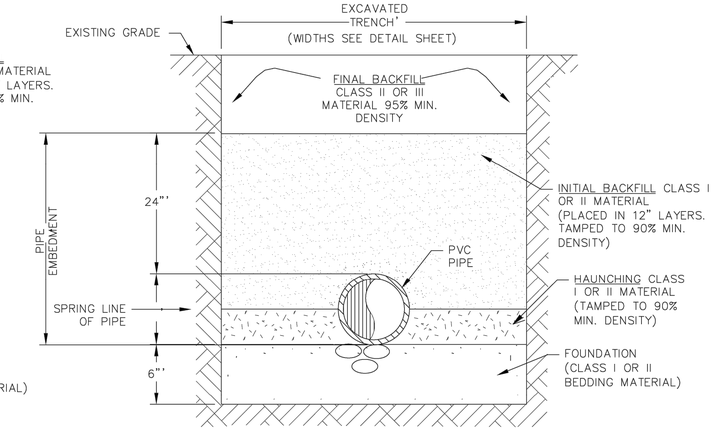
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EMBEDMENT DETAIL FOR A D.I. GRAVITY SEWER PIPE *

N.T.S.



EMBEDMENT DETAIL FOR PVC SEWER PIPE *

N.T.S.

GENERAL NOTES FOR COMPACTION

1. WHEN USING MECHANICAL COMPACTORS, AVOID CONTACT WITH PIPE. USE SMALL MECHANICAL COMPACTORS WHEN COMPACTING OVER PIPE CROWN AND MAINTAIN 6" MINIMUM COVER ABOVE PIPE. COMPACTION WITH BACK-HOE BUCKET, OR OTHER EQUIPMENT NOT INTENDED FOR COMPACTION USE, IS NOT ALLOWED.
2. MATERIAL SHALL BE INSTALLED AND COMPACTED IN 12" MAXIMUM LAYERS.
3. FINAL GRADE OF BEDDING SHALL BE LEVELED BY HAND.
4. HAUNCHING SHALL BE WORKED IN AROUND PIPE BY HAND & EVENLY TAMPED TO PROVIDE UNIFORM SUPPORT.
5. EMBEDMENT COMPACTION SHALL BE ACHIEVED BY PLACING AND WORKING IN BY HAND TO INSURE ALL EXCAVATED VOIDS AND HAUNCH AREAS ARE FILLED. HAND TAMP WITH VIBRATORY PLATE COMPACTORS. TO MINIMIZE COMPACTION EFFORT OF CLASS III MATERIAL, MOISTURE CONTENT SHALL BE MAINTAINED NEAR OPTIMUM.
6. LOCALIZED LOADINGS/DIFFERENTIAL SETTLEMENT SHALL BE MINIMIZED AT PIPE CROSSINGS.
7. PLACEMENT OF EMBEDMENT MATERIALS SHALL BE BY METHODS THAT WILL NOT DISTURB OR DAMAGE THE PIPE.
8. WORK IN AND TAMP THE HAUNCHING MATERIAL IN THE AREA BETWEEN THE BEDDING AND UNDERSIDE OF THE PIPE BEFORE PLACING AND COMPACTING THE REMAINDER OF THE EMBEDMENT IN THE PIPE ZONE.
9. USE COMPACTION EQUIPMENT AND TECHNIQUES THAT ARE COMPATIBLE WITH MATERIALS USED AND LOCATION IN THE TRENCH. (SEE NOTE 12)
10. HEAVY COMPACTION EQUIPMENT SHALL NOT BE USED FOR COMPACTION PURPOSES WITHIN THE PIPE EMBEDMENT AND FOUNDATION PIPE ZONES .BEFORE USING HEAVY COMPACTION OR CONSTRUCTION EQUIPMENT DIRECTLY OVER THE PIPE, PLACE SUFFICIENT BACKFILL TO PREVENT DAMAGE, EXCESSIVE DEFLECTIONS, OR OTHER DISTURBANCE OF THE PIPE. SUFFICIENT BACKFILL SHALL BE AS DETERMINED BY THE ENGINEER.
11. THE MINIMUM DEPTH OF COVER TO BE ESTABLISHED BY THE ENGINEER. IN THE ABSENCE OF AN ENGINEER REVIEW, THE FOLLOWING "DEFAULT" COVER RECOMMENDATIONS SHALL BE USED. FOR CLASS I, EMBEDMENT MATERIALS INSTALLED TO THE MINIMUM REQUIRED DENSITIES SHALL PROVIDE COVER OF AT LEAST 24" OR ONE PIPE DIAMETER (WHICHEVER IS GREATER). FOR CLASS II AND III, EMBEDMENT MATERIALS INSTALLED TO THE MINIMUM REQUIRED DENSITIES SHALL PROVIDE COVER OF AT LEAST 36" OR ONE PIPE DIAMETER (WHICHEVER IS GREATER). AT LEAST 48" COVER IS REQUIRED BEFORE USING HEAVY COMPACTION EQUIPMENT.
12. COMPACTION METHODS:
    a. COARSE GRAINED, CLEAN MATERIALS, SUCH AS CRUSHED STONE, GRAVELS AND SAND, ARE MORE READILY COMPACTED USING VIBRATORY EQUIPMENT. VIBRATORY PLATE TAMPERS WORK WELL FOR COARSE GRAINED MATERIALS (CLASS I AND CLASS II).
    b. FINE MATERIALS REQUIRE KNEADING AND IMPACT FORCE ALONG WITH CONTROLLED WATER CONTENT TO ACHIEVE ACCEPTABLE DENSITIES. HAND TAMPERS OR AIR DRIVEN HAND-HELD IMPACT RAMMERS ARE SUITABLE FOR THE FINE GRAINED MATERIALS (CLASS III AND CLASS IV).
    c. IN TRENCHES, SMALL HAND-HELD OR WALK BEHIND COMPACTORS ARE REQUIRED TO PRECLUDE DAMAGE TO THE PIPE AND TO INSURE THOROUGH COMPACTION IN THE CONFINED AREAS AROUND THE PIPE AND ALONG THE TRENCH WALL.

* UNLESS OTHERWISE SPECIFIED BY GEOTECHNICAL REPORT

EMBEDMENT MATERIAL & CLASS DESCRIPTIONS:
(SEE SPECIFICATIONS FOR SIEVE ANALYSIS)

CLASS I – ANGULAR,GRADED STONE, OR ROCK, DENSE OR OPEN GRADED W/ LITTLE OR NO FINES ($\frac{1}{4}$" INCH TO 1$\frac{1}{2}$" INCH IN SIZE) (ALDOT #57 STONE, B-BASE)

CLASS II – CLEAN COARSE GRAINED SANDS & GRAVELS (1$\frac{1}{2}$" INCH MAXIMUM SIZE)

CLASS III – COARSE GRAINED MATERIAL W/FINES. GRAVEL OR SAND MUST COMPRISE MORE THAN 50% OF CLASS III MATERIALS. (1$\frac{1}{2}$" INCHES MAX. SIZE)

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ALABAMA LICENSED No. 32428 PROFESSIONAL 10/27/23 ENGINEER JEFFREY V. HAVERCROFT

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CoM LD PERMIT REVIEW (REVISED GRADING/	2	01/02/24
DRAINAGE AND EROSION CONTROL PLANS)		

Date: 10/27/23
Designed By: Jeffrey Havercroft
Drawn By: Jeffrey Havercroft
Checked By: Gokmen Pacal
Profession: CIVIL
Project Architect: Andrew Marasca
M.M.A. Project Number: 502100720

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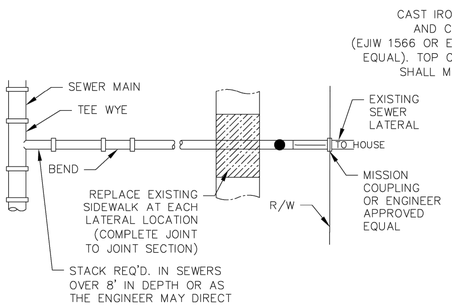
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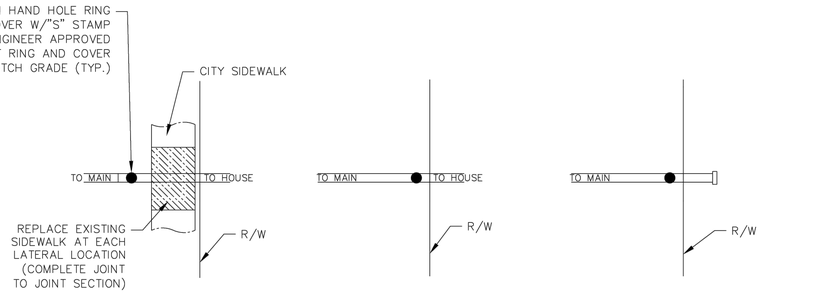
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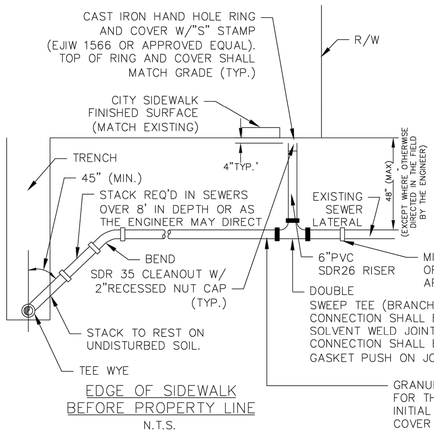
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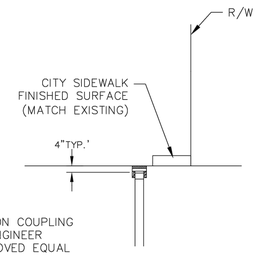




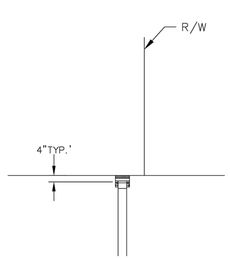
PLAN
N.T.S.



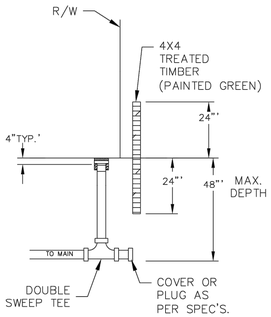
EDGE OF SIDEWALK
BEFORE PROPERTY LINE
N.T.S.



EDGE OF SIDEWALK
BEFORE PROPERTY LINE
N.T.S.



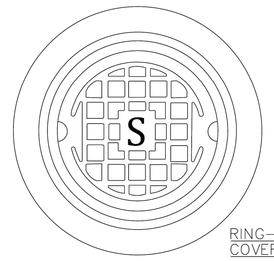
NO SIDEWALK
N.T.S.



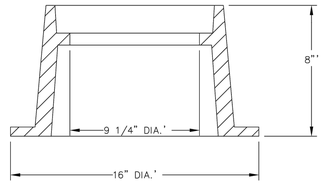
NO EXISTING LATERAL
N.T.S.

NOTE:
- GRAVITY LATERALS SHALL BE OF SDR 26 6"PVC PIPE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- DOUBLE SWEEP TEE SHALL BE GASKET RUN JOINTS BY SOLVENT WELD BRANCH JOINTS
- NON SEIZE GREASE, SUITABLE FOR USE WITH PVC, SHALL BE APPLIED TO THE THREADS OF THE CLEANOUT CAP.
- CONNECTION OF LATERALS TO EXISTING PIPE SHALL BE PROVIDED BY CUTTING IN TEES/TEE-WYES.
- WHERE SEWER MAIN IS OF HEAVY WALL PVC C900, THE CONNECTION OF LATERALS TO THE EXISTING PIPE SHALL BE WITH GASKETED PVC C900 45° WYE.

ELEVATIONS
TYPICAL TEE & LATERAL INSTALLATION
N.T.S.



COVER SECTION
N.T.S.

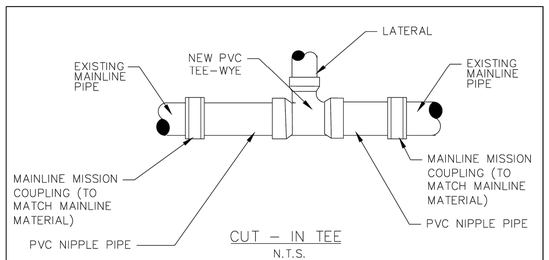


RING SECTION
N.T.S.

HAND HOLE RING & COVER
DETAIL FOR 6" CLEANOUT
N.T.S.

NOTE:

FOR 4" CLEANOUT U.S. FOUNDRY MODEL NO. 7610 OR EQUAL SHALL BE USED.



CUT - IN TEE
N.T.S.

NOTE:
- LENGTH SHALL VARY TO MEET ACTUAL FIELD CONDITION.

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Checked By: Gokmen Pacal
Profession: CIVIL
Project Architect: Andrew Marasca
M.M.A. Project Number: 502100720

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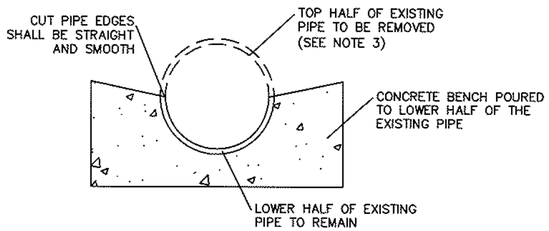
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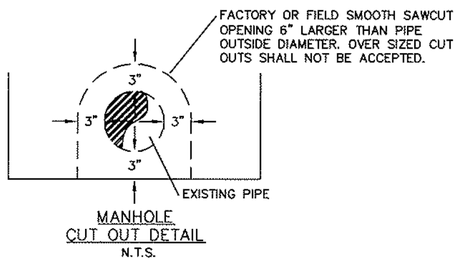
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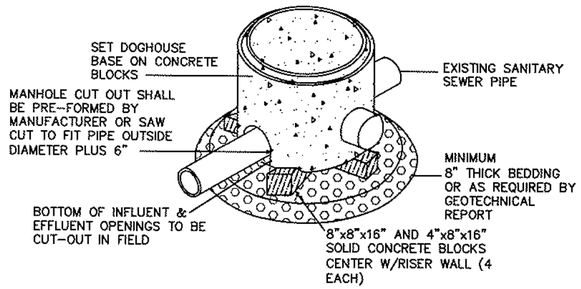
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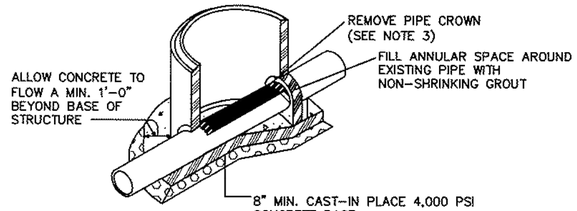


MANHOLE
CUT OUT DETAIL
N.T.S.

PRECAST CONCRETE MANHOLE BASES SHALL BE FABRICATED IN ACCORDANCE WITH SECTION 12.04 OF THESE SPECIFICATIONS



DOGHOUSE MANHOLE BASE
N.T.S.



FOUNDATION SECTION VIEW
N.T.S.

NOTES:

1. CONSTRUCT A FORMED INVERT FROM NEW SEWER LINE TO ALLOW FLOW TO THE EXISTING PIPE.
2. POUR A BENCH TO THE LOWER HALF OF THE EXISTING PIPE.
3. CUT AND REMOVE THE TOP HALF OF EXISTING PIPE TO WITHIN 6" OF THE MANHOLE WALLS AFTER THE INVERT AND BENCH HAVE BEEN FORMED AND THE MANHOLE HAS BEEN FULLY TESTED IN ACCORDANCE WITH THESE SPECIFICATIONS. PIPE CUTS AT FLOW CHANNEL SHALL BE STRAIGHT & SMOOTH. ALL JAGGED & IRREGULAR EDGES OF PIPE SHALL BE REMOVED.
4. FINAL INVERT SHALL CONFORM TO MANHOLE BENCH STANDARD DETAIL.
5. UPON COMPLETION OF MANHOLE INSTALLATION, THE INSIDE OF THE MANHOLE SHALL BE COATED WITH A CEMENTIOUS BASE MIX IN ACCORDANCE WITH THE REQUIREMENT OF STANDARD SPECIFICATION SECTION 19, UNLESS OTHERWISE DIRECTED BY THE OWNER OR ENGINEER.

TYPICAL MANHOLE BASE
SHOWING "DOGHOUSE" INSTALLATION

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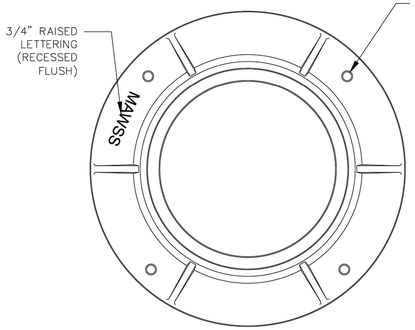
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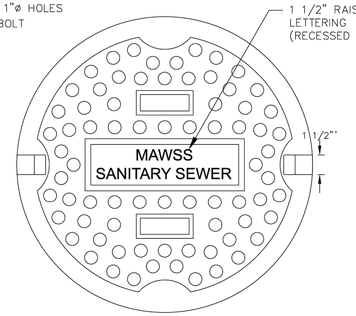
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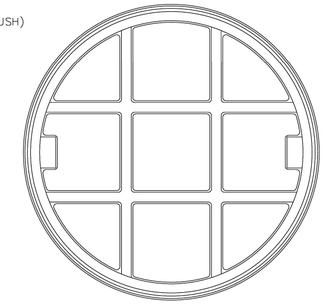
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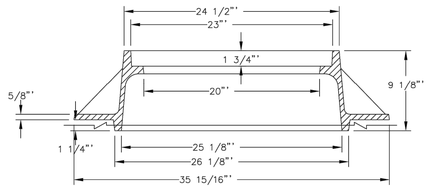


RING TOP VIEW

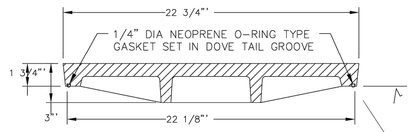




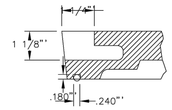
COVER BACK



RING SECTION
N.T.S.



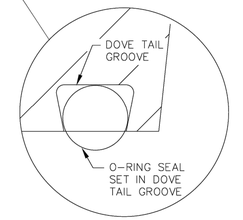
COVER SECTION
N.T.S.



(2) TYPE TWO NON-PENETRATING PICKHOLES
DOVE TAIL GROOVE & PICKHOLE DETAIL
N.T.S.

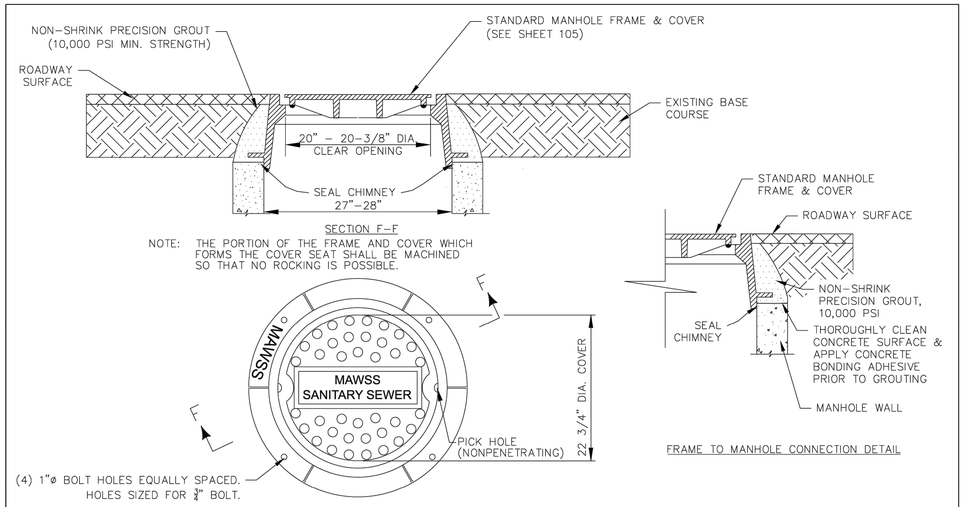
STANDARD MANHOLE FRAME & COVER

RANGE OF WEIGHTS
FRAME – 230 LB (MIN)–260 LB (MAX)
COVER – 120 LB (MIN)–130 LB (MAX)
TOTAL – 350 LB (MIN)–390 LB (MAX)
MATERIAL – GREY IRON ASTM A48CL35B
RATING – H20 FOR TRAFFIC



NOTE:

1. MANHOLE FRAME AND COVER SHALL BE EAST JORDAN MODEL# V-1476 OR APPROVED EQUAL
2. COVER SHALL HAVE O-RING SEAL IN DOVE TAIL GROOVE.



FRAME TO MANHOLE CONNECTION DETAIL

TYPE I A STANDARD MANHOLE FRAME & COVER INSTALLATION IN ROADWAYS

(FRAME GROUTED TO MANHOLE WALL)

N.T.S.

MANHOLE FRAME & COVER INSTALLATION TYPES
TYPE I–INSTALLATION IN ROADWAYS
IA: STANDARD FRAME & COVER (FRAME GROUTED TO MANHOLE)
IB: WATERTIGHT/BOLTDOWN FRAME & COVER (FRAME GROUTED & ANCHORED TO MANHOLE)
TYPE II–INSTALLATION IN EASEMENTS
IIA– STANDARD FRAME & COVER IN NON–FLOODING EASEMENTS (FRAME GROUTED TO MANHOLE)
IIB– STANDARD FRAME & COVER (FRAME ANCHORED TO MANHOLE)
IIC– WATERTIGHT/BOLTDOWN FRAME & COVER (FRAME ANCHORED TO MANHOLE)

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AFRICATOWN WELCOME CENTER

City of Mobile - Africatown Welcome Center 1959
1959 Bay Bridge Cutoff Road
Mobile, Alabama 36610

ALABAMA LICENSED No. 32428 PROFESSIONAL 10/27/23 ENGINEER JEFFREY V. HAVERCROFT

DATE	REV	REVISIONS DESCRIPTION
10/23/23		90% CD SUBMITTAL
10/27/23		100% CD SUBMITTAL
11/27/23	1	REVISE DEMO NOTES, DRAINAGE CALLOUTS
01/02/24	2	CoM LD PERMIT REVIEW (REVISED GRADING/ DRAINAGE AND EROSION CONTROL PLANS)

Date: 10/27/23
Designed By: Jeffrey Havercroft
Drawn By: Jeffrey Havercroft
Checked By: Gokmen Pacali
Profession: CIVIL
Project Architect: Andrew Marascia
M.M.A. Project Number: 502100720

SARCOR

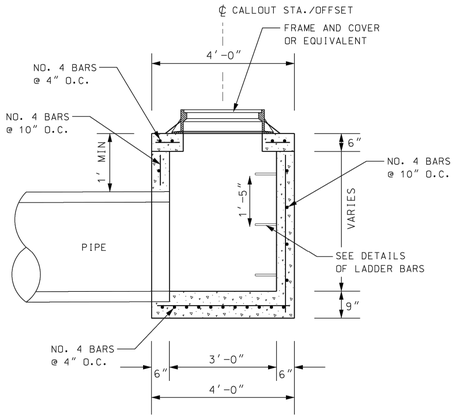
SHEET TITLE

DETAIL DRAWINGS

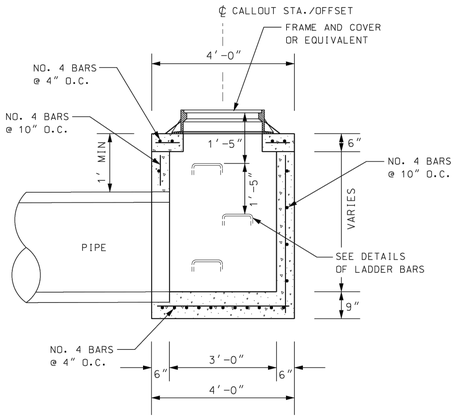
SHEET NUMBER

C804

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SIDE VIEW
NOT TO SCALE

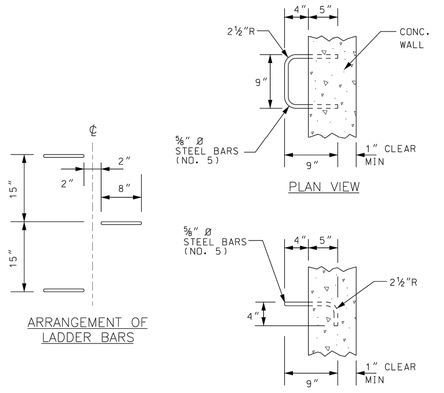


FRONT / BACK VIEW
NOT TO SCALE

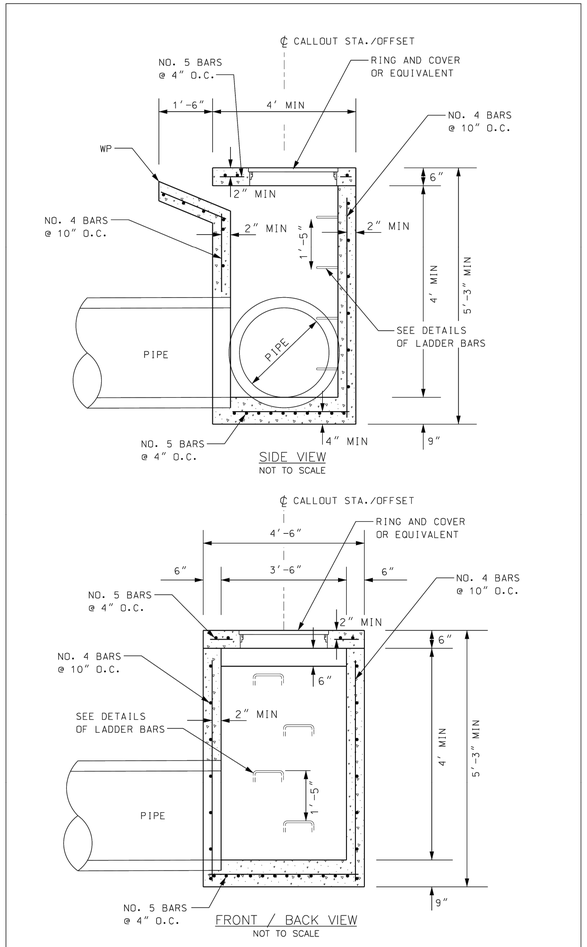
NOTE:
SEE SPECIAL DRAWING NO. JB-620-B INDEX NO. 501 ALDOT SPECIAL AND STANDARD DRAWING FOR ADDITIONAL INFORMATION

JUNCTION BOX, TYPE 1
N.T.S.

NOTE: A MINIMUM OF THREE (3) ⅝" Ø STEEL LADDER BARS ARE REQUIRED IN ALL INLETS WHERE INTERIOR DEPTH IS 4'-0" OR GREATER. NUMBER AND LOCATION OF LADDER REQUIRED IN INLETS TO BE DIRECTED BY THE ENGINEER.



DETAILS OF LADDER BARS
NOT TO SCALE

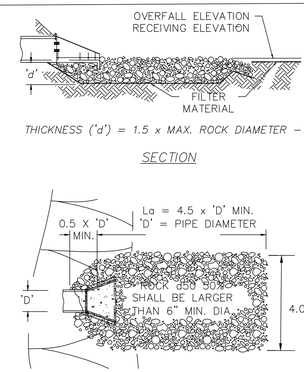


SIDE VIEW
NOT TO SCALE

FRONT / BACK VIEW
NOT TO SCALE

NOTE:
SEE SPECIAL DRAWING NO. I-621-S INDEX NO. 645 ALDOT SPECIAL AND STANDARD DRAWING FOR ADDITIONAL INFORMATION

INLET, TYPE S3 FOR 15" TO 30"
N.T.S.



THICKNESS ('d') = 1.5 x MAX. ROCK DIAMETER – 6") MIN.

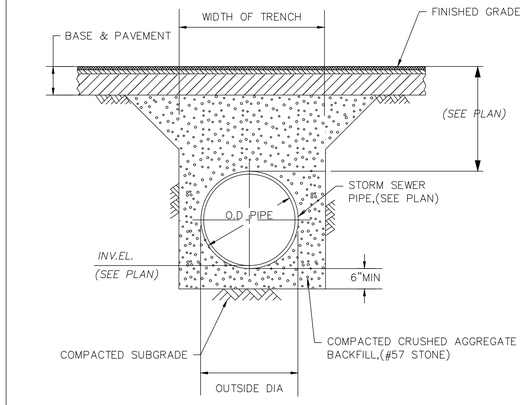
SECTION

PLAN

NOTES:

1. ENSURE THAT THE SUBGRADE FOR THE FILTER AND RIP RAP FOLLOWS THE REQUIRED LINES AND GRADES SHOWN IN THE PLAN. LOW AREAS IN THE SUBGRADE ON UNDISTURBED SOIL MAY ALSO BE FILLED BY INCREASING THE RIP RAP THICKNESS.
2. GEOTEXTILE FABRIC MUST MEET DESIGN REQUIREMENTS AND BE PROPERLY PROTECTED FROM PUNCTURING OR TEARING DURING INSTALLATION. REPAIR ANY DAMAGE BY REMOVING THE RIP RAP AND PLACING ANOTHER PIECE OF FILTER CLOTH OVER THE DAMAGED AREA. ALL CONNECTING JOINTS SHOULD OVERLAP A MINIMUM OF 1.5 FEET WITH THE UPSTREAM EDGE OVER THE DOWNSTREAM EDGE. IF THE DAMAGE IS EXTENSIVE, REPLACE THE ENTIRE GEOTEXTILE FABRIC.
3. RIP RAP MAY BE PLACED BY EQUIPMENT. CARE SHOULD BE TAKE TO AVOID DAMAGING THE FILTER.
4. CONSTRUCT THE APRON ON ZERO GRADE WITH NO OVERFALL AT THE END. MAKE THE TOP OF THE RIP RAP AT THE DOWNSTREAM END LEVEL WITH THE RECEIVING AREA OR SLIGHTLY BELOW IT..

OUTLET PROTECTION
NOT TO SCALE



NOTES:
ALL TRENCH EXCAVATION INCLUDING BUT NOT LIMITED TO: SLOPES, BENCHING, SHEETING, SHIELDING AND SHORING SHALL BE IN COMPLIANCE WITH U.S. DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH STANDARDS 29 CFR PART 1926, SUBPART P – EXCAVATIONS.

STORM SEWER PIPE BEDDING DETAIL(PAVED AREAS)
NOT TO SCALE

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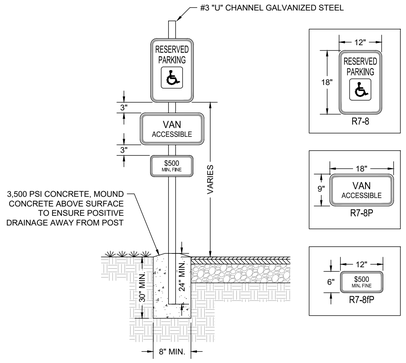
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Checked By: Gokmen Pacal
Profession: CIVIL
Project Architect: Andrew Marrasca
M.M.A. Project Number: 502100720

SARCOR

SHEET TITLE
DETAIL DRAWINGS

SHEET NUMBER
C805

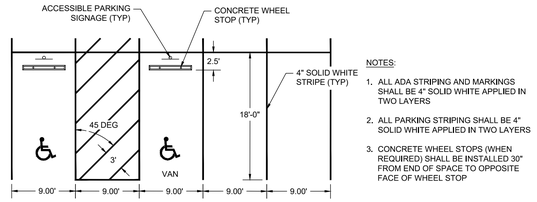
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NOTES:
1. ALL SIGNS SHALL BE STANDARD SIGNS (FLAT PANEL) 0.08 ALUMINUM OR 14 GAUGE STEEL.
2. ALL SIGNS SHALL BE MOUNTED ON POSTS w/ GALVANIZED FASTENERS,
3. MOUNTING HEIGHT (TO BOTTOM OF PRIMARY SIGN) SHALL BE 7'-0" IN PAVEMENTS OR SIDEWALKS OR 5'-0" IN LANDSCAPED AREAS

ACCESSIBLE PARKING SIGN / POST

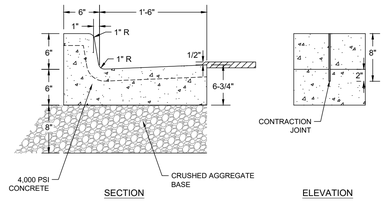
NOT TO SCALE



NOTES:
1. ALL ADA STRIPING AND MARKINGS SHALL BE 4" SOLID WHITE APPLIED IN TWO LAYERS
2. ALL PARKING STRIPING SHALL BE 4" SOLID WHITE APPLIED IN TWO LAYERS
3. CONCRETE WHEEL STOPS (WHEN REQUIRED) SHALL BE INSTALLED 30" FROM END OF SPACE TO OPPOSITE FACE OF WHEEL STOP

ACCESSIBLE PARKING STRIPING DETAIL

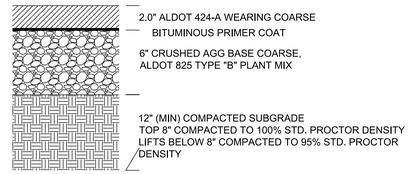
NOT TO SCALE



NOTES:
1. SEE ALDOT STD DRAWING 623-XY FOR GENERAL NOTES AND DETAILS.
2. CONTRACTION JOINTS REQUIRED MINIMUM OF 8 LF IN TANGENTS, INLETS, AND AS DIRECTED BY ENGINEER.

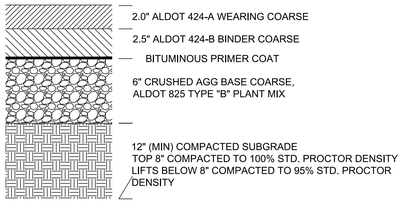
CONCRETE CURB & GUTTER ALDOT TYPE C (MOD)

NOT TO SCALE



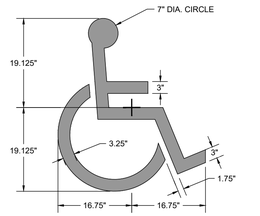
ASPHALT (STD DUTY) PAVEMENT DETAIL

NOT TO SCALE



ASPHALT (MED DUTY) PAVEMENT DETAIL

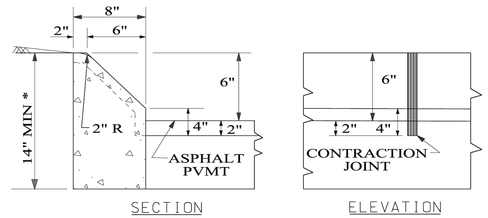
NOT TO SCALE



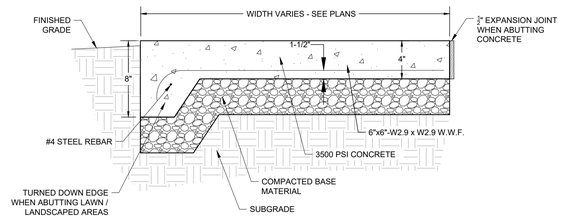
NOTES:
1. ALL PAVEMENT MARKINGS SHALL BE WHITE IN COLOR.
2. REF. ALDOT STANDARD DRAWING TCM-703

ACCESIBLE PARKING PAVEMENT MARKINGS

NOT TO SCALE

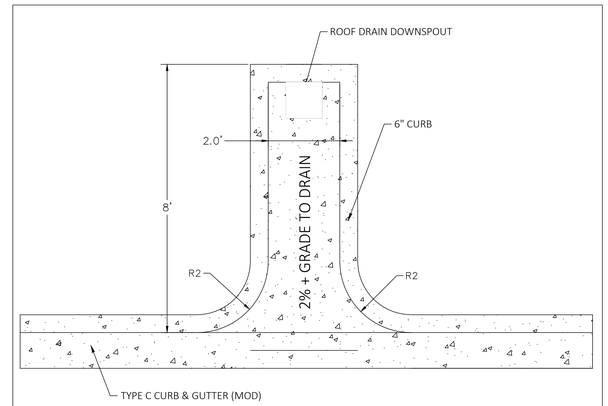


TYPE "N" SLOPING TYPE



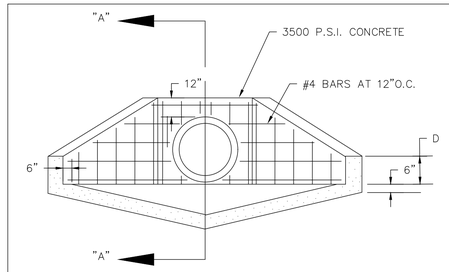
4" CONCRETE SIDEWALK WITH TURNDOWN EDGE

NOT TO SCALE

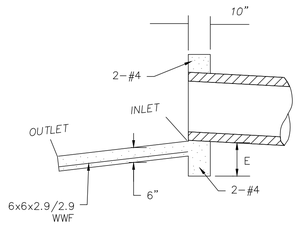


ROOF DRAIN OUTFALL

N.T.S

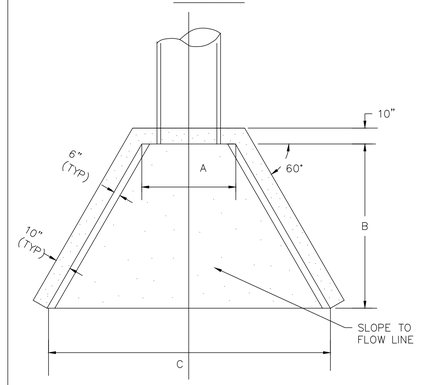


ELEVATION



SECTION "A-A"

DIMENSIONS TABLE					
DIA.	A	B	C	D	E
12"	20"	30"	60"	6"	8"
15"	23"	36"	72"	6"	8"
18"	28"	42"	84"	9"	8"
24"	34"	48"	96"	9"	8"
30"	40"	54"	108"	12"	10"
36"	48"	60"	120"	15"	10"
42"	54"	66"	132"	18"	10"
48"	60"	72"	144"	21"	12"
54"	66"	78"	156"	24"	12"
60"	72"	84"	168"	24"	12"



PLAN

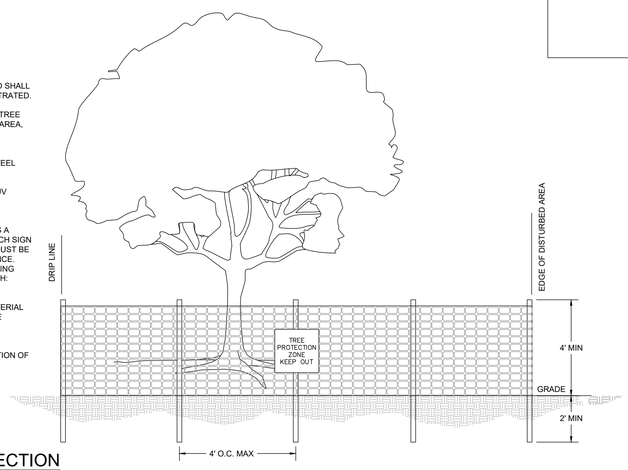
NOTE:

ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED ONE INCH

WINGED HEADWALL/ENDWALL

NOT TO SCALE

NOTES:
1. ALL PLANTS DESIGNATED TO BE SAVED SHALL BE PROTECTED BY FENCING, AS ILLUSTRATED.
2. INSTALL TREE PROTECTION FENCE AT TREE DRIP LINE OR AT EDGE OF DISTURBED AREA, AS SHOWN ON PLANS, PRIOR TO COMMENCEMENT OF CONSTRUCTION.
3. FENCE POSTS SHALL BE 1.33 LBS/LF STEEL POSTS.
4. FENCE MATERIAL SHALL BE ORANGE, UV RESISTANT, HIGH TENSILE STRENGTH POLYETHYLENE FABRIC.
5. SPACE TREE PROTECTION ZONE SIGNS A MINIMUM OF ONE EVERY 100 FEET. EACH SIGN MUST BE ATTACHED TO A POST, AND MUST BE VISIBLE FROM BOTH SIDES OF THE FENCE. THE SIGN MUST CONTAIN THE FOLLOWING LANGUAGE IN BOTH ENGLISH & SPANISH: "TREE PROTECTION ZONE, KEEP OUT".
6. THERE SHALL BE NO STORAGE OF MATERIAL WITHIN THE BOUNDARIES OF THE TREE PROTECTION FENCING.
7. TREE PROTECTION FENCING SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT.



TREE PROTECTION

NOT TO SCALE

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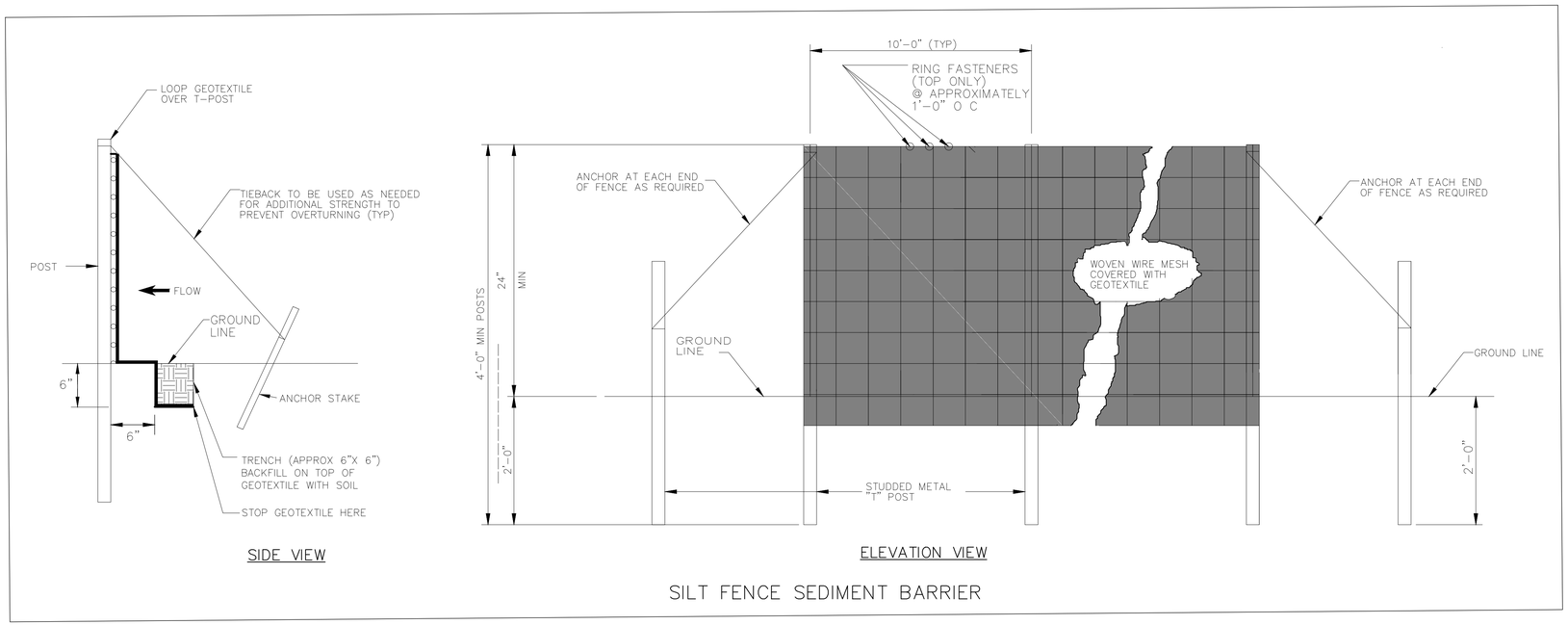
SHEET TITLE

DETAIL DRAWINGS

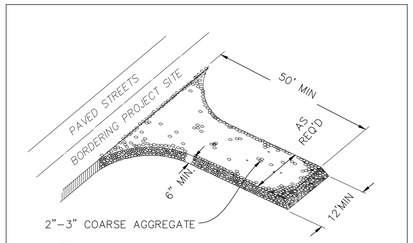
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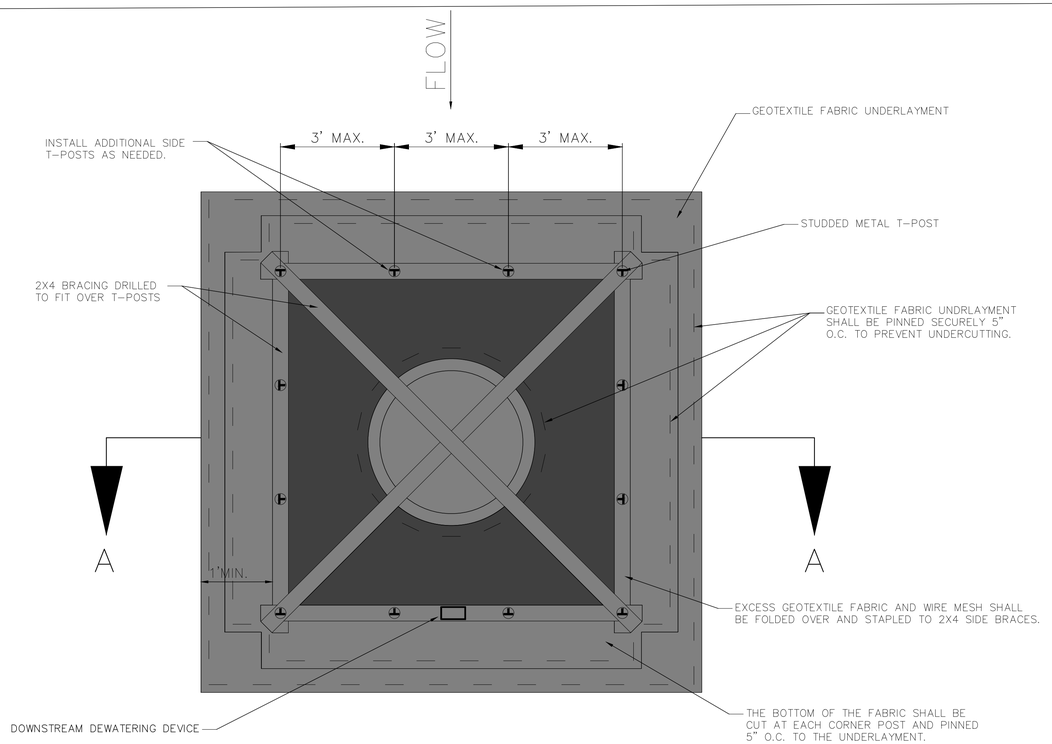


SILT FENCE SEDIMENT BARRIER

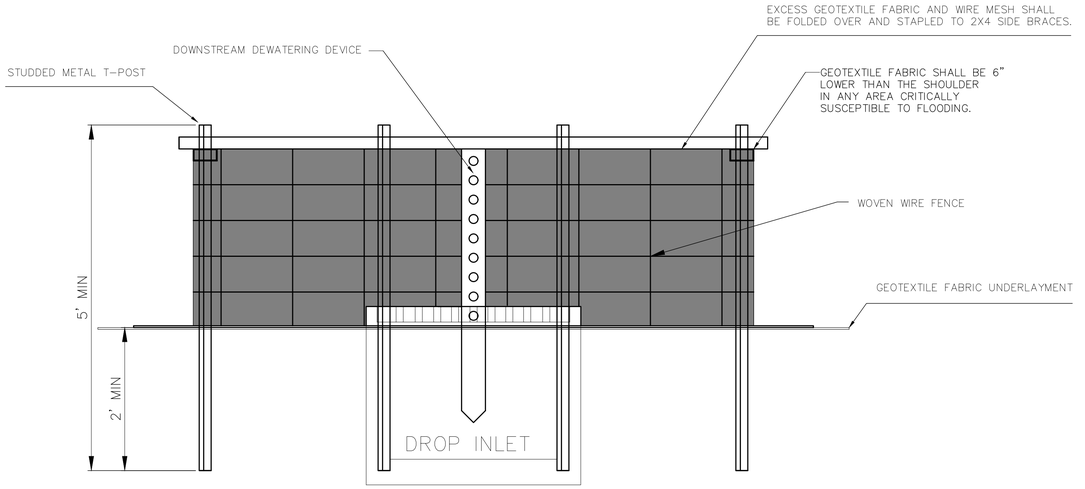


NOTE:
GRAVEL PAD IS REQUIRED TO PROVIDE BUFFER AREA WHERE VEHICLES CAN DROP THEIR MUD AND SEDIMENT TO AVOID TRANSPORTING IT ONTO PAVED STREETS, TO CONTROL EROSION FROM SURFACE RUNOFF, AND TO HELP CONTROL DUST.

TEMPORARY CONSTRUCTION ENTRANCE
N.T.S



PLAN VIEW



SECTION A–A

NOTES:
1. THE TOP OF THE REQUIRED GEOTEXTILE FABRIC SHALL BE 6" LOWER THAN THE SHOULDER ELEVATION IN ANY AREA CRITICALLY SUSCEPTIBLE TO FLOODING.
2. DEWATERING HOLES SHALL BE 1"–1.5"IN DIAMETER AND SPACED 2"–3" APART TO ALLOW FOR DEWATERING IN NO MORE THAN 48 HOURS.
3. FASTEN DEWATERING DEVICE TO THE 2X4 SIDE BRACE.
4. STAPLE GEOTEXTILE FABRIC TO DEWATERING DEVICE AND CUT CROSS SLITS IN THE FILTER FABRIC AT THE HOLE LOCATIONS TO ALLOW WATER TO FLOW THROUGH.
5. USE 8 OZ. NON–WOVEN GEOTEXTILE FOR UNDERLAYMENT AND 4 OZ. NON–WOVEN GEOTEXTILE FOR SILT FENCE.
6. USE THE SAME TYPE OF WOVEN WIRE FENCE AS THE TYPE USED ON A SILT FENCE, PULLED TIGHTLY AND SECURED TO T–POSTS.

INLET PROTECTION

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Profession: CIVIL
Project Architect: Andrew Marascia
M.M.A. Project Number: 502100720

SARCOR

SHEET TITLE

DETAIL DRAWINGS

SHEET NUMBER

C807

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10/30/2023 2:55:54 PM

GENERAL

1. TO THE BEST OF OUR KNOWLEDGE, THE STRUCTURAL PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE 2021 INTERNATIONAL BUILDING CODE.

2. THE STRUCTURAL DOCUMENTS ARE TO BE USED IN CONJUNCTION WITH THE ARCHITECTURAL, CIVIL, ELECTRICAL, MECHANICAL AND PLUMBING DOCUMENTS. USE THESE NOTES IN CONJUNCTION WITH THE SPECIFICATIONS. IF A CONFLICT EXISTS, THE MORE STRINGENT GOVERNS.

3. COMPLY WITH REQUIREMENTS OF THE BUILDING CODE, OSHA, AND ALL OTHER APPLICABLE FEDERAL, STATE AND LOCAL CODES, STANDARDS, REGULATIONS AND LAWS.

4. ALL REFERENCED STANDARDS REFER TO THE EDITION IN FORCE AT THE TIME THESE PLANS AND SPECIFICATIONS ARE ISSUED FOR PERMITTING.

5. REVIEW ALL CONTRACT DOCUMENTS, DIMENSIONS AND SITE CONDITIONS AND COORDINATE WITH FIELD DIMENSIONS AND PROJECT SHOP DRAWINGS PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES IN WRITING TO ARCHITECT/ENGINEER. DO NOT CHANGE SIZE OR DIMENSIONS OF STRUCTURAL MEMBERS WITHOUT WRITTEN INSTRUCTIONS FROM THE STRUCTURAL ENGINEER OF RECORD.

6. ANY DISCREPANCIES, OMISSIONS OR VARIATIONS NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS DISCOVERED DURING THE BIDDING PERIOD SHALL BE IMMEDIATELY COMMUNICATED IN WRITING TO THE ARCHITECT/ENGINEER.

7. PROTECT EXISTING FACILITIES, STRUCTURES AND UTILITY LINES FROM ALL DAMAGE. EACH CONTRACTOR SHALL PROTECT HIS WORK, ADJACENT PROPERTY AND THE PUBLIC. EACH CONTRACTOR IS SOLELY RESPONSIBLE FOR DAMAGE OR INJURY DUE TO HIS ACT OR NEGLECT.

8. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SAFETY AND CONSTRUCTION PROCEDURES.

9. DO NOT SCALE DRAWINGS; USE DIMENSIONS.

10. REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS FOR SIZE AND LOCATION OF OPENINGS IN STRUCTURE NOT SHOWN ON STRUCTURAL DRAWINGS.

11. DETAILS LABELED "TYPICAL DETAILS" OR "TYP" ON THE DRAWINGS APPLY TO ALL SITUATIONS THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY DETAILED. SUCH DETAILS APPLY WHETHER OR NOT THEY ARE KEYED IN AT EACH LOCATION. QUESTIONS REGARDING APPLICABILITY OF TYPICAL DETAILS SHALL BE RESOLVED BY THE ARCHITECT/ENGINEER.

12. DESIGN LOADS AND CRITERIA:

A. DEAD AND LIVE LOADS

- ROOF LIVE LOAD	20 PSF	EXTERIOR CEILING DEAD LOAD (ELEC INCLUDED):	19 PSF
- FLOOR LIVE LOAD	100 PSF	INTERIOR CEILING DEAD LOAD (MECH/ELEC INCLUDED):	17 PSF
- CONCENTRATED LOADS	AS SHOWN ON PLANS		

B. ROOF UPLIFT PRESSURES — REFER TO S1.6

C. WIND CRITERIA (ASCE 7-16)

- WIND SPEED, V_{ULT}	160 MPH
- EXPOSURE	B
- RISK CATEGORY	II
- ENCLOSURE	ENCLOSED*

* TO ACHIEVE ENCLOSED CLASSIFICATION, ALL GLAZED OPENINGS SHALL BE IMPACT-RESISTANT OR PROTECTED WITH AN IMPACT-RESISTANT COVERING.

D. SEISMIC CRITERIA (ASCE 7-16)

- IMPORTANCE FACTOR	1.00
- MAPPED RESPONSE ACCELERATION, S_S	0.095
- MAPPED RESPONSE ACCELERATION, S_1	0.060
- RESPONSE COEFFICIENT, S_{D1}	0.097
- RESPONSE COEFFICIENT, S_{DS}	0.101
- DESIGN CATEGORY	B
- SEISMIC-FORCE-RESISTING SYSTEM	STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE
- RESPONSE MODIFICATION FACTOR, R	3 (ASCE 7-16 - TABLE 12.2.-1 LINE H)
- RESPONSE COEFFICIENT, C_S	0.029
- ANALYSIS PROCEDURE	EQUIVALENT LATERAL FORCE PROCEDURE

E. SNOW LOAD CRITERIA (ASCE 7-16)

- GROUND SNOW LOAD	0 PSF

13. ALL WIND FORCES SHALL BE DETERMINED ACCORDING TO THE PROVISIONS OF ASCE FOR THE MINIMUM WIND CRITERIA STATED IN NOTE 12, INCLUDE ALL APPROPRIATE SHAPE, HEIGHT, AND GUST FACTORS FOR THE MAIN WIND FORCE RESISTING SYSTEM AND CLADDING. TO CALCULATE THE MAXIMUM NET ROOF UPLIFT, USE 60% DEAD LOAD.

SHOP DRAWING SUBMITTAL

1. THE FOLLOWING REQUIREMENTS IN NO WAY REDUCE OR LIMIT ANY ADDITIONAL REQUIREMENTS OF THE SPECIFICATIONS.

2. REVIEW OF SUBMITTALS BY THE STRUCTURAL ENGINEER IS FOR GENERAL COMPLIANCE WITH THE CONTRACT DOCUMENTS. RESPONSIBILITY FOR THE CORRECTNESS OF DIMENSIONS, DETAILS, QUANTITIES, AND SAFETY DURING FABRICATION AND CONSTRUCTION SHALL REMAIN WITH THE CONTRACTOR.

3. CORRECTIONS AND/OR COMMENTS MADE ON THE SHOP DRAWINGS DURING REVIEW DO NOT IMPLY THAT ALL ERRORS AND OMISSIONS HAVE BEEN CORRECTED, NOR DOES IT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE CONTRACT DOCUMENTS.

4. NO DETAILED CHECK OF QUANTITIES OR DIMENSIONS WILL BE MADE. ONLY THOSE SHOP DRAWINGS REQUIRED BY THE CONTRACT DOCUMENTS TO BE SUBMITTED WILL BE REVIEWED. ALL OTHERS WILL BE RETURNED WITHOUT COMMENT.

5. SHOP DRAWINGS WILL NOT BE REVIEWED UNLESS THEY ARE STAMPED "APPROVED" OR "APPROVED AS NOTED" BY THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER, WHICH EVER IS APPLICABLE.

6. THE CONTRACTOR SHALL INFORM THE ENGINEER IN WRITING OF ANY SPECIFIC DEVIATIONS TO THE CONTRACT DOCUMENTS AND OBTAIN ENGINEER'S WRITTEN APPROVAL BEFORE PROCEEDING.

7. IN ACCORDANCE WITH THE SPECIFICATIONS SUBMIT SHOP DRAWINGS CONSISTENT WITH THE FOLLOWING CRITERIA:

   A. ALLOW ADEQUATE TIME FOR TRANSIT AND PROCESSING BEFORE FABRICATION.

   B. SCHEDULE AND SUBMIT SHOP DRAWINGS FOR SPECIFIC COMPONENTS, SUCH AS COLUMNS, FOOTINGS, ETC., IN THEIR ENTIRETY. SHOP DRAWINGS FOR SIMILAR FLOORS SHALL BE SUBMITTED IN THE SAME PACKAGE.

   C. SUBMIT SHOP DRAWINGS IN A TIMELY MANNER, CONSISTENT WITH THE ABOVE REQUIREMENTS.

8. ALL CHANGES AND ADDITIONS MADE ON RESUBMITTALS MUST BE CLEARLY FLAGGED AND NOTED. THE PURPOSE OF THE RESUBMITTALS MUST BE CLEARLY NOTED ON THE LETTER OF TRANSMITTAL. ARCHITECT / ENGINEER REVIEW WILL BE LIMITED TO THE ITEMS CAUSING THE RESUBMITTAL.

9. DO NOT REPRODUCE THE CONTRACT DOCUMENTS FOR USE AS SHOP DRAWINGS.

10. SHOP DRAWINGS NOT MEETING THE ABOVE CRITERIA OR SUBMITTED AFTER FABRICATION WILL NOT BE REVIEWED.

11. RESPONSIBILITIES OF DETAILERS AND FABRICATORS:

   A. GENERAL- SUBMIT SHOP DRAWINGS AND ANY OTHER SPECIAL INFORMATION NECESSARY FOR PROPER FABRICATION, ERECTION, AND PLACEMENT OF STRUCTURAL FABRICATIONS. INCLUDE PLANS, ELEVATIONS, AND SECTIONS. CLEARLY SHOW ANCHORAGES, CONNECTIONS, AND ACCESSORY ITEMS. THE DETAILER MUST INTERPRET THE CONTRACT DOCUMENTS AND CLEARLY CONVEY THIS INTERPRETATION TO THE FIELD IN THE FORM OF PLACING OR ERECTION DRAWINGS.

   B. CONCRETE REINFORCING DETAILER- PROVIDE PLACING DRAWINGS FOR FABRICATION AND PLACING OF REINFORCING STEAL. THESE DRAWINGS SHALL INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING: BAR LISTS, SCHEDULES, BENDING DETAILS, PLACING DETAILS, PLACING PLANS, AND PLACING ELEVATIONS.

   C. CLEARLY SHOW ELEVATION, SECTIONS, AND DETAILS OF ALL BEAM TO COLUMN CONNECTIONS.

   D. CLEARLY SHOW COLUMN ELEVATIONS AND SECTIONS. INDICATE DOWELS, OFFSETS, LAP SPLICES, AND TIES. PLAN SECTIONS OF ALL COLUMNS MUST CLEARLY BE SHOWN.

   E. CLEARLY SHOW ELEVATIONS OF ALL BEARING AND SHEAR WALLS. INDICATE OPENINGS, DETAILS OF ALL REINFORCING WITH LOCATIONS OF SPLICES AND HOOKS, ALL CONTROL JOINTS, EXPANSION JOINTS, LINTELS, CONCRETE BOND BEAMS, AND PILASTERS. CLEARLY SHOW BEAM ELEVATIONS AND SECTIONS. INDICATE BAR LENGTHS, HOOKS, STIRRUP SPACING, LAP SPLICES, OFFSETS, AND LOCATION OF BARS WITH RESPECT TO ALL SUPPORTS.

   F. CLEARLY SHOW FOUNDATION REINFORCING. INDICATE BAR LENGTHS, LOCATION AND SPLICES OF CONTINUOUS BARS, AND BAR SUPPORTS. CLEARLY SHOW LOCATIONS OF ALL DOWELS ON PLAN. INDICATE FOOTING STEP LOCATIONS AND PROVIDE DETAILS.

12. FOR ADDITIONAL CRITERIA APPLICABLE TO SHOP DRAWINGS REQUIRING ENGINEERING INPUT BY A SPECIALTY ENGINEER, REFER TO "SHOP DRAWING REQUIRING ENGINEERING INPUT BY SPECIALTY ENGINEER" GENERAL NOTE SECTION.

SHOP DRAWING REQUIRING ENGINEERING INPUT BY SPECIALTY ENGINEER

1. SPECIALTY ENGINEER:

   A. DEFINITION - A REGISTERED PROFESSIONAL ENGINEER IN THE STATE THE PROJECT IS LOCATED WHO SPECIALIZES IN AND WHO UNDERTAKES THE DESIGN OF STRUCTURAL COMPONENTS OR STRUCTURAL SYSTEMS INCLUDED IN A SPECIFIC SUBMITTAL PREPARED FOR THIS PROJECT.

   B. SHALL BE:
      A. AN EMPLOYEE OR OFFICER OF A FABRICATOR.
      B. AN EMPLOYEE OR OFFICER OF AN ENTITY SUPPLYING COMPONENTS TO A FABRICATOR.
      C. AN INDEPENDENT CONSULTANT RETAINED BY THE FABRICATOR OR HIS SUPPLIER.

2. THE FOLLOWING SYSTEMS AND COMPONENTS AS A MINIMUM REQUIRE FABRICATION AND ERECTION DRAWINGS WITH INPUT BY A SPECIALTY ENGINEER, BUT ARE NOT LIMITED TO: JOISTS, JOIST GIRDERS, SPECIAL JOIST, SHORING AND RESHORING, WINDOWS, STOREFRONT, CURTAIN WALL SYSTEMS, DOORS, ROOF SYSTEMS, PRE-ENGINEERED METAL BUILDING, LOUVERS, SIDING AND ANY EXTERIOR ANCILLARY STRUCTURES.

3. THE SPECIALTY ENGINEER OR MANUFACTURER SHALL DESIGN, PROVIDE, AND INSTALL THEIR COMPONENTS AND THE COMPONENT CONNECTIONS TO THE PRIMARY STRUCTURE PER THE WIND CRITERIA STATED IN THESE NOTES OR THE CURRENT GOVERNING BUILDING CODES, WHICHEVER IS MORE STRINGENT.

4. SUBMITTALS SHALL CLEARLY IDENTIFY THE SPECIFIC PROJECT AND APPLICABLE CODES, LIST THE DESIGN CRITERIA, AND SHOW ALL DETAILS AND PLANS NECESSARY FOR PROPER FABRICATION AND INSTALLATION. CALCULATIONS AND SHOP DRAWINGS SHALL IDENTIFY SPECIFIC PRODUCT UTILIZED. GENERIC PRODUCTS WILL NOT BE ACCEPTED.

5. SHOP DRAWINGS AND CALCULATIONS MUST BE PREPARED UNDER THE DIRECT SUPERVISION AND CONTROL OF THE SPECIALTY ENGINEER.

6. SHOP DRAWINGS AND CALCULATIONS REQUIRE THE SEAL, DATE AND SIGNATURE OF THE SPECIALTY ENGINEER. COMPUTER PRINTOUTS ARE AN ACCEPTABLE SUBSTITUTE FOR MANUAL COMPUTATIONS PROVIDED THEY ARE ACCOMPANIED BY SUFFICIENT DESCRIPTIVE INFORMATION TO PERMIT THEIR PROPER EVALUATION. SUCH DESCRIPTIVE INFORMATION SHALL BEAR THE EMBOSSED SEAL AND SIGNATURE OF THE SPECIALTY ENGINEER AS AN INDICATION THAT HE HAS ACCEPTED RESPONSIBILITY FOR THE RESULTS. THE STRUCTURAL ENGINEER WILL RETAIN ONE SIGNED AND SEALED COPY FOR RECORD.

7. CATALOG INFORMATION ON STANDARD PRODUCTS DOES NOT REQUIRE THE SEAL OF A SPECIALTY ENGINEER.

8. REVIEW BY THE STRUCTURAL ENGINEER OF RECORD OF SUBMITTALS IS LIMITED TO VERIFYING THE FOLLOWING:
   A. THAT THE SPECIFIED STRUCTURAL SUBMITTALS HAVE BEEN FURNISHED.
   B. THAT THE STRUCTURAL SUBMITTALS HAVE BEEN SIGNED AND SEALED BY THE SPECIALTY ENGINEER.
   C. THAT THE SPECIALTY ENGINEER HAS UNDERSTOOD THE DESIGN INTENT AND HAS USED THE SPECIFIED STRUCTURAL CRITERIA. (NO DETAILED CHECK OF CALCULATIONS WILL BE MADE.)
   D. THAT THE CONFIGURATION SET FORTH IN THE STRUCTURAL SUBMITTALS IS CONSISTENT WITH THE CONTRACT DOCUMENTS. (NO DETAILED CHECK OF DIMENSIONS OR QUANTITIES WILL BE MADE.)

SOIL PREPARATION AND COMPACTION

1. THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER OF RECORD SHALL BE FOLLOWED.

2. SOIL COMPACTION SHALL BE FIELD CONTROLLED BY A SOILS ENGINEER OR TESTING LABORATORY. A REPORT BEARING THE SIGNATURE AND EMBOSSED SEAL OF A REGISTERED PROFESSIONAL ENGINEER IN THE STATE THE PROJECT IS LOCATED WHO CONTROLLED AND TESTED THE SOIL COMPACTION SHALL BE SUBMITTED TO THE ARCHITECT AND ENGINEER OF RECORD AS AN INDICATION THAT THE REQUIREMENTS OF THE CONTRACT DOCUMENTS HAVE BEEN FOLLOWED.

3. EXCAVATE EXISTING SOIL TO BOTTOM OF FOOTINGS. ALL DELETERIOUS MATERIAL MUST BE COMPLETELY REMOVED.

4. ALL EXISTING UTILITIES & ORGANICS(INCLUDING STUMPS AND ROOTS) SHALL BE COMPLETELY REMOVED PRIOR TO FILL OPERATIONS.

5. SOIL COMPACTION, FILL, AND ITS REPLACEMENT SHALL BE FIELD CONTROLLED BY THE TESTING AGENCY OR GEOTECHNICAL ENGINEER OF RECORD. THE TESTING AGENCY SHALL RANDOMLY SELECT ALL TEST LOCATIONS.

6. THE CONTRACTOR SHALL DETERMINE WHETHER DE-WATERING WILL BE REQUIRED BASED ON ACTUAL GROUND WATER CONDITIONS AT THE TIME OF CONSTRUCTION.

SLABS ON GRADE

1. PREPARE SUBGRADE AS PER THE RECOMMENDATION OUTLINED IN THE GEOTECHNICAL REPORT INCLUDED IN THE SPECIFICATIONS.

2. 20 MIL VAPOR BARRIER BETWEEN SOIL AND CONCRETE SLAB, UNLESS OTHERWISE NOTED.

3. RECESS SLABS ON GRADE FOR FLOOR FINISHES PER ARCHITECTURAL DRAWINGS.

4. REFER TO PLAN FOR THICKNESS AND DIMENSIONS.

FOUNDATIONS

1. **FOUNDATION DESIGN IS BASED ON THE FOLLOWING ALLOWABLE BEARING CAPACITY OF 3000 PSF FOR THE BUILDING FOUNDATIONS AS RECOMMENDED BY GEOTECHNICAL ENGINEERING TESTING, INC., DATED OCTOBER 23, 2023, PROJECT 23-177. ALL RECOMMENDATIONS IN THIS REPORT SHALL BE FOLLOWED.**

2. DO NOT EXCAVATE FOR ANY PURPOSE WITHIN ONE FOOT OF THE ANGLE OF REPOSE OF ANY SOIL BEARING FOOTING OR FOUNDATION UNLESS SUCH FOOTING OR FOUNDATION IS FIRST PROPERLY PROTECTED AGAINST SETTLEMENT.

3. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL EXCAVATION PROCEDURES INCLUDING LAGGING, SHORING, AND PROTECTION OF ADJACENT PROPERTY, STRUCTURES, STREETS AND UTILITIES IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL BUILDING DEPARTMENT.

4. THE CONTRACTOR IS RESPONSIBLE FOR THE LEGAL DISPOSAL OF ACCUMULATED WATER FROM EXCAVATION AND DEWATERING OPERATIONS IN SUCH A WAY AS NOT TO CAUSE INCONVENIENCE TO THE WORK AND DAMAGE TO THE STRUCTURAL ELEMENTS. THE CONTRACTOR SHALL FIELD VERIFY GROUND WATER DEPTHS PRIOR TO CONSTRUCTION.

PLAIN AND REINFORCED CONCRETE

1. USE STRUCTURAL CONCRETE AND CONCRETING PRACTICES CONFORMING TO ACI-316 AND 301 AND PROPORTION CONCRETE IN ACCORDANCE WITH ACI-318 CH. 4 AND MEETING A MINIMUM. ULTIMATE COMPRESSIVE STRENGTH IN 28 DAYS AS FOLLOWS:

   FOOTINGS, PIERS, GRADE BEAMS, STAIRS AND SLAB ON GRADE: 4000 PSI
   ALL OTHER CONCRETE: 4000 PSI
   PROVIDE CURRENT (MAXIMUM. 1 YEAR OLD) STATISTICAL DATA FOR EACH CONCRETE MIX DESIGN SUBMITTED.

2. WHERE CONCENTRATION OF REINFORCING STEEL HINDERS PROPER CONSOLIDATION OF CONCRETE USE CONCRETE CONTAINING A SUPERPLASTICIZING (N.R.W.R.) ADMIXTURE, ASTM C494 TYPE F. SLUMP AFTER ADDITION OF SUPERPLASTICIZER SHALL BE 7" ±1".

3. IF CONCRETE IS PUMPED, SLUMP MAY BE INCREASED TO 6" AT THE TRUCK. USE A MINIMUM 4-INCH PUMP, UNLESS PRE-APPROVED BY ENGINEER. TAKE CONCRETE SAMPLES FOR SLUMP AT TRUCK AND AT DISCHARGE END. TAKE CONCRETE SAMPLES FOR CYLINDER TESTING AT DISCHARGE END.

4. PROVIDE CONSTRUCTION JOINTS IN ACCORDANCE WITH ACI 318 CH. 6.4 AND SUBMIT SHOP DRAWINGS SHOWING LOCATIONS AND DIRECTION OF CONCRETE PLACEMENT FOR STRUCTURAL ENGINEER'S REVIEW. ROUGHEN JOINTS AND EXTEND ALL REINFORCEMENT THROUGH JOINT. PROVIDE CLASS B LAP SPLICE BEYOND JOINT. PROVIDE JOINTS IN MIDDLE THIRD OF ALL SLAB & BEAMS U.O.N.

5. PROVIDE REINFORCING STEEL ERECTOR WITH A SET OF STRUCTURAL PLANS FOR FIELD USE. INSPECT REINFORCING STEEL PLACING FROM STRUCTURAL PLANS.

6. USE ASTM A-615 GR. 60 FOR ALL REINFORCING STEEL, CONFORM TO ACI-301, ACI-315, ACI-318, AND CRSI "MANUAL OF STANDARD PRACTICE". ALL REINFORCING SHALL BE ACCURATELY PLACED, RIGIDLY SUPPORTED AND FIRMLY TIED IN PLACE WITH BAR SUPPORTS AND SPACERS IN ACCORDANCE WITH THE ABOVE REQUIREMENTS. PROVIDE CLASS 'B' LAP SPLICE FOR CONTINUOUS BARS, UNLESS OTHERWISE NOTED. LAP BOTTOM STEEL OVER SUPPORTS AND TOP STEEL AT MID SPAN UNLESS OTHERWISE SPECIFIED. HOOK DISCONTINUOUS ENDS OF ALL TOP BARS AND ALL BARS IN WALLS, UNLESS OTHERWISE NOTED.

7. PLACE REINFORCING STEEL SUCH THAT BARS ADJACENT TO CONCRETE SURFACES & COLD JOINTS MEET MINIMUM CLEAR COVER REQUIREMENTS, BUT DO NOT EXCEED THOSE REQUIREMENTS. USE THE FOLLOWING CLEAR COVER OVER REINFORCING:

	BOTTOM	TOP	SIDES
SLABS	-	1 1/2"	1 1/2"
PIERS	-	-	3"
FOOTINGS	3"	3"	3"

8. USE PLAIN, COLD-DRAWN ELECTRICALLY-WELDED STEEL WIRE FABRIC CONFORMING TO ASTM A-1064. SUPPLY IN FLAT SHEETS ONLY. LAP SPLICES SHALL BE MEASURED BETWEEN OUTERMOST CROSS WIRES OF EACH FABRIC SHEET AND SHALL BE NOT LESS THAN TWICE THE SPACING OF THE CROSS WIRES PLUS TWO (2) INCHES.

9. SLEEVE ALL PIPES THROUGH SLABS INDIVIDUALLY, UNLESS APPROVED BY ENGINEER.

10. SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATING REINFORCING STEEL. DO NOT REPRODUCE THE STRUCTURAL DRAWINGS FOR USE AS SHOP DRAWINGS.

11. PROVIDE CLASS 'B' LAP SPLICE AT SUPPORTS AND HOOK DISCONTINUOUS ENDS AT THE FAR FACE OF SUPPORTS FOR ALL BEAMS, UNLESS OTHERWISE NOTED.

12. REINFORCING PLACED IN LOCATIONS WHERE PROPER COVER CANNOT BE ACHIEVED SHALL BE HOT DIPPED GALVANIZED ACCORDING TO ASTM A767 WITH 2 OUNCES OF ZINC COATING PER SQUARE FOOT OF SURFACE AREA MINIMUM.

13. ALL EXPOSED CONCRETE AND GROUT EDGES SHALL HAVE 3/4", 45° CHAMFER UNLESS OTHERWISE NOTED.

POST-INSTALLED ANCHORS & REINFORCING:

1. SUBSTITUTION OF ANCHORS SPECIFIED BELOW FOR CAST-IN-PLACE EMBEDDED ANCHORS SHALL BE PROHIBITED WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER OF RECORD.

2. ALLOWABLE WORKING LOADS SHALL NOT EXCEED MANUFACTURER'S RECOMMENDATIONS, BUT NOT MORE THAN ACCEPTED BY APPROVING AGENCY. NO INCREASE FOR WIND OR SEISMIC LOADS IS PERMITTED.

3. PROVIDE A MINIMUM OF TWO FASTENERS PER CONNECTION.

4. INSTALL AND MAINTAIN A MINIMUM. EMBEDMENT IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS, OR AS SPECIFIED ON DRAWING, WHICHEVER IS GREATER, BUT WITH AN EMBEDMENT OF NOT LESS THAN 6 BOLT DIAMETERS.

5. UNLESS NOTED, ANCHOR SPACING AND ANCHOR EDGE DISTANCE SHALL BE ACCORDING TO THE MANUFACTURER'S MOST CURRENT PUBLICATION IN ORDER TO DEVELOP MAXIMUM WORKING LOADS.

6. DO NOT EXCEED MANUFACTURER'S MAXIMUM. RECOMMENDED TIGHTENING TORQUE.

7. ALL ANCHORS SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS AND UNDER MANUFACTURER CERTIFIED SUPERVISION IN ORDER TO DEVELOP THE MOST CURRENT PUBLISHED WORKING LOADS.

8. EXPANSION ANCHORS: USE WEDGE-TYPE EXPANSION ANCHORS SUCH AS HILTI KWIK BOLT II OR ENGINEERED APPROVED EQUIVALENT.

9. ADHESIVE ANCHORING SYSTEMS:

   A. USE AN EPOXY OR POLYESTER RESIN ADHESIVE SUCH AS HILTI RE 500, SIMPSON SET OR ACCEPTED ALTERNATE.

   B. DIAMETER OF HOLE SHALL BE AS RECOMMENDED BY MANUFACTURE FOR THE PARTICULAR PRODUCT SPECIFIED IN THE DRAWINGS.

   C. ALL EPOXIED ANCHORING SHALL BE OBSERVED BY A MANUFACTURER'S AUTHORIZED REPRESENTATIVE OR SHALL BE TESTED AFTER INSTALLATION AT CONTRACTOR'S EXPENSE. A MINIMUM OF 10% OF EACH DAY'S APPLICATIONS AND NO LESS THAN 2 SHALL BE TESTED BY THE FOLLOWING:

      1. REINFORCING STEEL: APPLY A TENSION LOAD OF 3000 lb TO THE EMBEDDED ANCHOR
      2. THREADED RODS AND BOLTS: APPLY 50% OF MAXIMUM ALLOWABLE TORQUE AS RECOMMENDED BY MANUFACTURER

      IF A TEST APPLICATION FAILS, ALL APPLICATIONS FOR THAT DAY SHALL BE TESTED. TESTING PROCEDURES AND RESULTS SHALL BE SUBMITTED AND APPROVED BY ENGINEER.

10. POWDER ACTUATED FASTENERS: USE POWDER ACTUATED FASTENING SYSTEMS SUCH AS HILTI, RED HEAD, RAMSET, OR AN ACCEPTED ALTERNATE HAVING ICBO, OR SBCCI APPROVAL. INSTALL IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS, BUT NOT LESS THAN 1 1/8" INCHES IN CONCRETE, UNLESS OTHERWISE NOTED.

11. ANCHOR INSTALLATION SHALL ENSURE RECOMMENDED MANUFACTURER LOADS CAN BE ACHIEVED.

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REVISIONS DESCRIPTION

REV	DATE
A	07/17/2023
B	10/01/2023
C	10/27/2023

DATE: OCTOBER 27, 2023
DESIGNED BY: MJT
DRAWN BY: MJT
CHECKED BY: CEL
PROFESSION: STRUCTURAL
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED ENGINEER
No. 28305
PROFESSIONAL
10-30-2023
CHRISTOPHER EDWARD LYNER

SHEET TITLE
GENERAL NOTES (1/1)

SHEET NUMBER.
S001

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PRE-ENGINEERED METAL BUILDING

1. THE ENGINEER OF RECORD DELEGATES THE RESPONSIBILITY FOR THE DESIGN, PREPARATION, FABRICATION, AND ERECTION DRAWINGS OF THE METAL BUILDING TO A SPECIALTY ENGINEER LICENSED IN THE STATE OF ALABAMA. SUBMIT ALL BUILDING COMPONENT AND SHOP DRAWING AND CALCULATIONS TO THE ENGINEER OF RECORD FOR REVIEW PRIOR TO SHOP FABRICATION. ALL SHOP DRAWINGS AND CALCULATIONS SHALL BE SIGNED, DATED, AND SEALED BY A SPECIALTY ENGINEER LICENSED IN THE STATE OF FLORIDA PRIOR TO SUBMITTING FOR REVIEW.

2. THE PRE-ENGINEERED METAL BUILDING SHOP DRAWINGS, INCLUDING BUT NOT LIMITED TO COLUMN REACTIONS, ANCHOR BOLT SIZES AND LAYOUT, AND BASE PLATE SIZES AND LAYOUTS SHALL BE SUBMITTED TO AND REVIEWED BY THE ENGINEER OF RECORD PRIOR TO FABRICATION AND CONSTRUCTION OF THE FOUNDATIONS.

3. COMPLY WITH THE REQUIREMENTS OF THE 2021 INTERNATIONAL BUILDING CODE, ASCE 7-16, AND MBMA "LOW RISE BUILDING SYSTEMS MANUAL".

4. REFER TO ARCHITECTURAL, ELECTRICAL, MECHANICAL, AND PLUMBING DRAWINGS FOR ANY ITEMS TO BE SUSPENDED FROM THE ROOF PURLINS AND MAIN FRAMES.

5. LIMIT BUILDING DRIFT TO MEET THE 2021 INTERNATIONAL BUILDING CODE.

6. REFER TO GENERAL NOTES AND SPECIFICATIONS FOR LOADS.

7. ALL STEEL FRAMING, BOLTS, AND PLATES SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION AND PAINTED WITH THE COLOR APPROVED BY THE OWNER.

8. ALL LIGHT GUAGE AND STEEL SHEET METAL EXPOSED TO ENVIRONMENTAL CONDITIONS SHALL BE GALVANIZED G90. LIGHT GAUGE AND STEEL SHEET METAL PROTECTED FROM ENVIRONMENTAL CONDITIONS BY FASCADE OR THE ENVELOPE OF THE BUILDING SHALL BE G60.

9. BRACING & FRAME LOCATIONS SHALL NOT DEVIATE FROM THAT SHOWN ON PLANS.

10. PROVIDE METAL BUILDING FRAMING, ROOF AND WALL PANEL SYSTEMS THAT ALLOW FOR THERMAL MOVEMENTS BY PREVENTING BUCKLING, OPENING OF JOINTS, OVERSTRESSING OF COMPONENTS, FAILURE OF JOINT SEALANTS, FAILURE OF CONNECTIONS, AND OTHER DETRIMENTAL EFFECTS.

11. ALL COLUMN BASES SHALL BE PINNED, UNLESS OTHERWISE NOTED.

12. ALL SHOP AND FIELD WELDING SHALL CONFORM TO THE STRUCTURAL WELDING CODE AWS D1.1, LATEST EDITION, PUBLISHED BY THE AMERICAN WELDING SOCIETY (AWS). USE ELECTRODES CONFORMING TO AWS D1.1, E70 SERIES, U.O.N. SHOW ALL SHOP WELDS ON THE FABRICATION DRAWINGS AND ALL FIELD WELDS ON THE ERECTION DRAWINGS.

13. ALL SHOP AND FIELD WELDERS, WELDING OPERATORS, AND TACKERS SHALL BE CERTIFIED ACCORDING TO AWS PROCEDURES FOR THE WELDING PROCESS AND WELDING POSITION USED. ALL RECORDS OF SUCH CERTIFICATION SHALL BE FILED AT THE JOB SITE & MADE AVAILABLE TO THE ENGINEER UPON REQUEST.

14. ALL JOINT WELDING PROCEDURES TO BE USED SHALL BE PREPARED BY THE FABRICATOR OR CONTRACTOR AS WRITTEN PROCEDURE SPECIFICATIONS. ALL RECORDS SHALL BE FILED AT THE JOB SITE & MADE AVAILABLE TO THE ENGINEER UPON REQUEST. ALL JOINT WELDING PROCEDURES SHALL BE QUALIFIED PRIOR TO USE ACCORDING TO AWS PROCEDURES.

15. ANCHOR BOLTS

    A. ANCHOR BOLTS SHALL BE F1554, GRADE 36 WITH HEAVY HEX NUTS AND HARDENED STEEL WASHERS.

    B. HARDENED STEEL WASHERS SHALL BE REGULAR SERIES, TYPE B, PLAIN, HARDENED WASHERS COMPLYING WITH ANSI B18.22.1 USING A325 CARBON STEEL PLATE WITHOUT ANY BREAK OR GAP.

    C. ANCHOR BOLTS SHALL BE THREADED FOR FULL PROJECTION ABOVE ROUGH CONCRETE UON.

    D. TIGHTEN ANCHOR BOLTS AS FOLLOWS:

        1. BRING ALL ANCHOR BOLTS TO A SNUG TIGHT CONDITION OBTAINED BY A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF A PERSON USING AN ORDINARY SPUD WRENCH.

    E. BASE PLATES SHALL BE GROUTED IMMEDIATELY AFTER FINAL ANCHOR BOLT TIGHTENING

16. NO CUTTING OF SECTIONS, FLANGES, WEBS, OR ANGLES SHALL BE ALLOWED WITHOUT WRITTEN APPROVAL FROM THE SPECIALTY ENGINEER. IF ALLOWED, CUT, DRILL, OR PUNCH HOLES PERPENDICULAR TO METAL SURFACES. DO NOT FLAME CUT HOLES OR ENLARGE HOLES BY BURNING.

17. IMMEDIATELY AFTER ERECTION. ALL FRAMING MEMBERS AND WELDS SHALL BE TOUCHED UP WITH COLD SPRAY GALVANIZING AND FINISHED PAINT.

18. GROUT UNDER BASE PLATES SHALL BE HIGH STRENGTH, NON-SHRINK AND NON-METALLIC AS MANUFACTURED BY FIVE-STAR, MASTER BUILDERS, SIKA, QUIKCRETE, OR APPROVED EQUAL.

MISCELLANEOUS STEEL:

1. FOR MISCELLANEOUS STEEL NOT SHOWN ON STRUCTURAL DRAWINGS, REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS.

2. EDGE ANGLES, CLIP ANGLES, PLATES, BARS AND OTHER MISCELLANEOUS ROLLED SHAPES SHALL BE ASTM A-36 STRUCTURAL STEEL, UNLESS OTHERWISE NOTED.

TEMPORARY BRACING:

1. THE CONTRACTOR SHALL PROVIDE TEMPORARY BRACING AS REQUIRED DURING CONSTRUCTION.

2. THE CONTRACTOR SHALL RETAIN AT THE CONTRACTOR'S EXPENSE A REGISTERED STRUCTURAL ENGINEER LICENSED IN THE STATE OF THE PROJECT TO DESIGN AND INSPECT ALL TEMPORARY SHORING AND BRACING. SIGNED, SEALED AND DATED DESIGN CALCULATIONS SHALL BE SUBMITTED FOR REVIEW WHEN REQUESTED.

LIGHT GAUGE GALVANIZED WALL AND CEILING FRAMING:

1. THE WALL AND CEILING FRAMING SHOWN ON THE DRAWINGS IS THE BASIS OF DESIGN FOR THE PROJECT.

2. IF THE CONTRACTOR PROPOSES AN ALTERNATE WALL AND CEILING FRAMING DESIGN, THE CONTRACTOR SUPPLY A DESIGN DURING THE SHOP DRAWING PROCESS ILLUSTRATING LAYOUT, LOADING , MEMBER SIZES, BRACING, ANCHORAGE, CONNECTIONS, AND OTHER NECCESSARY FABRICATION AND ERECTION INFORMATION. COMPUTER PRINTOUTS ARE AN ACCEPTABLE SUBSTITUTE FOR MANUAL CALCULATIONS IF THEY ARE ACCOMPANIED BY SUFFICIENT DESIGN ASSUMPTIONS AND IDENTIFIED INPUT AND OUTPUT INFORMATION TO PERMIT PROPER EVALUATION BY THE STRUCTURAL ENGINEER OF RECORD. DO NOT FABRICATE MEMBERS UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED BY THE STRUCTURAL ENGINEER OF RECORD. ALL SHOP DRAWINGS SHALL INCLUDE THE SEAL AND SIGNATURE OF THE SPECIALTY ENGINEER.

3. IF AN ALTERNATE DESIGN IS PROPSED DURING THE SHOP DRAWING REVIEW PROCESS, THE STRUCTURAL ENGINEER OR RECORD DELEGATES THE RESPONSIBILITY FOR THE DESIGN OF THE WALL AND CEILING FRAMING TO A SPECIALTY ENGINEER LICENSED IN THE STATE OF ALABAMA.

4. DESIGN SHALL BE IN ACORDANCE WITH AISI "SPECIFICATION FOR THE DESIGN OF COLF FORMED STRUCTURAL MEMBERS".

5. JOINTS AND CONNECTIONS SHALL BE MADE WITH GALVANIZED #12 SCREWS.

6. ALL LIGHT GAUGE FRAMING EXPOSED TO EXTERIOR ENVIRONMENTAL CONDTIONS SHALL HAVE A G90 COATING. ALL LIGHT GAUGE FRAMING WITHIN THE EXTERIOR VENEER AND ENVELOPE OF THE BUILDING SHALL HAVE A G60 COATING.

STRUCTURAL STEEL

1. ALL STEEL WORK (INCLUDING FABRICATION AND ERECTION) SHALL CONFORM TO THE AISC "MANUAL OF STEEL CONSTRUCTION, ALLOWABLE STRESS DESIGN" CURRENT EDITION AND PROJECT SPECIFICATIONS, USE THE FOLLOWING:

    A. STRUCTURAL STEEL WIDE FLANGE AND WT SECTIONS: ASTM A992 Fy=50KSI
    B. CHANNELS, ANGLES, PLATES, AND MISCELLANEOUS STEEL: ASTM A36, Fy=36KSI
    C. COLD-FORMED STEEL TUBING: ASTM A500 GRADE C, Fy=50KSI
    D. STEEL PIPE: ASTM A53, TYPE E OR S GRADE B, Fy=35KSI

2. THE CONNECTIONS FOR ANY PORTION OF THE STRUCTURE NOT INDICATED ON THE DRAWINGS SHALL BE DESIGNED AND DETAILED BY THE FABRICATOR'S SPECIALTY ENGINEER. THESE CONNECTIONS SHALL BE DESIGNED FOR THE FORCES INDICATED ON THE STRUCTURAL DRAWINGS. WHERE FORCES ARE NOT SHOWN ON THE DRAWINGS, EACH END CONNECTION SHALL BE DESIGNED FOR ONE-HALF THE TOTAL LOAD SHOWN IN THE APPROPRIATE AISC "ALLOWABLE LOADS ON BEAMS" TABLES.

3. USE STRUCTURAL STEEL THAT IS FULLY WELDABLE WITHIN GRADES AND FROM ANY GRADE TO ANY OTHER GRADE. WELD ALL SHOP CONNECTIONS, UNLESS OTHERWISE NOTED.

4. ALL SHOP AND FIELD WELDING SHALL CONFORM TO THE STRUCTURAL WELDING CODE AWS D1.1, LATEST EDITION, PUBLISHED BY THE AMERICAN WELDING SOCIETY (AWS). USE ELECTRODES CONFORMING TO AWS D1.1, E70 SERIES, UNLESS OTHERWISE NOTED. SHOW ALL SHOP WELDS ON THE FABRICATION DRAWINGS AND ALL FIELD WELDS ON THE ERECTION DRAWINGS.

5. ALL SHOP AND FIELD WELDERS, WELDING OPERATORS, AND TACKERS SHALL BE CERTIFIED ACCORDING TO AWS PROCEDURE FOR THE WELDING PROCESS AND WELDING POSITION USED. ALL RECORDS OF SUCH CERTIFICATION SHALL BE FILED AT THE JOBSITE AND MADE AVAILABLE TO THE ENGINEER UPON REQUEST.

6. ALL JOINT WELDING PROCEDURES TO BE USED SHALL BE PREPARED BY THE FABRICATOR OR CONTRACTOR AS WRITTEN PROCEDURE SPECIFICATIONS. ALL RECORDS SHALL BE FILED AT THE JOB SITE & MADE AVAILABLE TO THE ENGINEER UPON REQUEST. ALL JOINT WELDING PROCEDURES SHALL BE QUALIFIED PRIOR TO USE ACCORDING TO AWS PROCEDURES.

7. BOLTED CONNECTIONS:
    A. ALL BOLTS SHALL BE A325, 3/4" DIA AND CONFORM TO ASTM A325 TYPE 1, HIGH STRENGTH BOLTS FOR STRUCTURAL STEEL JOINTS, UNLESS OTHERWISE NOTED. DO NOT USE TYPE 2 BOLTS.

    B. PROVIDE HARDENED WASHERS CONFORMING TO ASTM F436. PLACE HARDENED WASHERS UNDER PART BEING TURNED.

    C. ALL BOLTS SHALL BE NEW AND DOMESTICALLY MANUFACTURED. DO NOT REUSE BOLTS. USE ONLY NON-GALVANIZED NUTS AND BOLTS THAT ARE CLEAN, RUST-FREE, AND WELL LUBRICATED. BOLTS AND NUTS SHALL BE WAX DIPPED BY THE BOLT SUPPLIER OR LUBRICATED WITH JOHNSON'S STICK WAX 140.

    D. BEARING-TYPE BOLTS (A325N) SHALL BE TIGHTENED TO THE SNUG TIGHT CONDITIONS. THE SNUG TIGHT CONDITION IS DEFINED AS THE TIGHTNESS THAT EXISTS WHEN ALL PLIES IN A JOINT ARE IN FIRM CONTACT. THIS MAY BE ATTAINED BY A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF A MAN USING AN ORDINARY SPUD WRENCH.

    E. SLIP CRITICAL TYPE BOLTS (A325SC) OR BOLTS NOTED TO BE FULLY TIGHTENED SHALL BE TIGHTENED TO THE MINIMUM FASTENER TENSION INDICATED IN SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A-325 OR ASTM A-490 BOLTS SECTION 5, TABLE 3. TENSION SHALL BE DETERMINED SOLELY BY USE OF DIRECT TENSION INDICATORS, COMPLYING WITH ASTM F959-85, OR "LOHR" TENSION CONTROL BOLTS. HARDENED WASHERS SHALL BE USED FOR FRICTION-TYPE BOLTS. PROVIDE ONLY DOMESTICALLY MANUFACTURED BOLTS AND D.T.I.'S FRICTION-TYPE BOLTED CONNECTIONS MAY BE INSTALLED.

    F. SHOP DESIGNED BOLTED CONNECTIONS SHALL USE A325N, 3/4" DIA BOLTS UNLESS OTHERWISE NOTED..

    G. TRUSS CONNECTIONS SHALL USE A325X, 3/4" DIA BOLTS. FULLY TIGHTEN ALL BOLTS IN TRUSS CONNECTION AS REQUIRED FOR SLIP CRITICAL CONNECTIONS.

    H. ALL BOLTS IN HANGER TYPE CONNECTIONS WHERE THE BOLTS ARE SUBJECT TO DIRECT TENSION SHALL BE FULLY TIGHTENED AS REQUIRED FOR SLIP CRITICAL CONNECTIONS. USE COMPRESSIBLE-WASHER TYPE DIRECT TENSION INDICATORS CONFORMING TO ASTM F959.

8. ANCHOR BOLTS
    A. ANCHOR BOLTS SHALL BE F1554, GRADE 36 WITH HEAVY HEX NUTS AND HARDENED STEEL WASHERS.

    B. HARDENED STEEL WASHERS SHALL BE REGULAR SERIES, TYPE B, PLAIN, HARDENED WASHERS COMPLYING WITH ANSI B18.22.1 USING A325 CARBON STEEL PLATE WITHOUT ANY BREAK OR GAP.

    C. ANCHOR BOLTS SHALL BE THREADED FOR FULL PROJECTION ABOVE ROUGH CONCRETE, UNLESS OTHERWISE NOTED.

    D. TIGHTEN ANCHOR BOLTS AS FOLLOWS:
    - BRING ALL ANCHOR BOLTS TO A SNUG TIGHT CONDITION OBTAINED BY A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF A PERSON USING AN ORDINARY SPUD WRENCH.

    E. BASE PLATES SHALL BE GROUTED IMMEDIATELY AFTER FINAL ANCHOR BOLT TIGHTENING.

9. GROUT UNDER BASE PLATES SHALL BE HIGH STRENGTH, NON-SHRINK AND NON-METALLIC AS MANUFACTURED BY FIVE STAR, MASTER BUILDERS, SIKA OR APPROVED EQUIVALENT.

10. CUT, DRILL, OR PUNCH HOLES PERPENDICULAR TO METAL SURFACES. DO NOT FLAME CUT HOLES OR ENLARGE HOLES BY BURNING.

11. SPLICING OF STRUCTURAL STEEL MEMBERS IN THE FIELD OR IN THE SHOP IS PROHIBITED EXCEPT WHERE INCLUDED ON THE DRAWINGS.

12. PRE-ENGINEERED METAL BUILDING COLUMN CAN EITHER BE PLACED DIRECTLY ON THE PIER OR PLACED ON 2" GROUT BENEATH BASE PLATES. GROUT SHALL BE 5000 PSI HIGH STRENGTH CEMENTITIOUS NON-SHRINK METALLIC GROUT.

13. DO NOT PAINT STEEL SURFACES IN CONTACT WITH CONCRETE. DO NOT APPLY FINISH COAT AND LIMIT PRIME COAT TO 2 MILS AT FAYING SURFACES OF SLIP CRITICAL BOLTED CONNECTIONS, SURFACES TO BE WELDED AND TOP SURFACES OF BEAMS AND TRUSSES TO RECEIVE STEEL STUDS AND/OR SUPPORTING METAL FLOOR AND ROOF DECKING. USE PRIMER WHICH HAS A MINIMUM. CLASS A SLIP COEFFICIENT (0.33).

14. REFER TO ARCHITECTURAL PLANS FOR FIREPROOFING OF STRUCTURAL STEEL MEMBERS, REFER TO SPECIFICATIONS FOR PAINTING OF STRUCTURAL STEEL.

15. SUBMIT STRUCTURAL STEEL SHOP DRAWINGS TO ENGINEER FOR REVIEW BEFORE FABRICATION. ALL STRUCTURAL STEEL SHOP DRAWINGS, REQUIRING INPUT FROM A SPECIALTY ENGINEER, SHALL BE SIGNED AND SEALED PRIOR TO SUBMITTAL. DO NOT REPRODUCE THE STRUCTURAL DRAWINGS FOR USE AS SHOP DRAWINGS.

16. PROVIDE TEMPORARY BRACING AS NECESSARY TO INSURE A STABLE STRUCTURE DURING CONSTRUCTION.

17. NO CUTTING OF SECTIONS, FLANGES, WEBS, OR ANGLES SHALL BE ALLOWED WITHOUT WRITTEN APPROVAL FROM THE ENGINEER OF RECORD.

18. FABRICATE AND ERECT STRUCTURAL STEEL IN ACCORDANCE WITH AISC SPECIFICATIONS AND "CODE OF STANDARD PRACTICE".

19. IMMEDIATELY AFTER ERECTION ALL FRAMING MEMBERS AND WELDS SHALL BE TOUCHED UP WITH A PAINT COMPATIBLE WITH THE SHOP PAINT OR COATING.

STATEMENT OF SPECIAL INSPECTIONS

SPECIAL INSPECTIONS:

1. SPECIAL INSPECTIONS ARE REQUIRED IN ACCORDANCE WITH 2021 INTERNATIONAL BUILDING CODE, CHAPTER 17.

2. THE OWNER SHALL SELECT AND PAY ALL COSTS OF EMPLOYING A SPECIAL INSPECTOR, BUT THE SPECIAL INSPECTOR SHALL BE RESPONSIBLE TO THE ENFORCING AGENCY.

3. THE CONTRACTOR'S CONTRACTUAL OR STATUTORY OBLIGATIONS ARE NOT RELIEVED BY ANY ACTION OF THE SPECIAL INSPECTOR.

SPECIAL INSPECTIONS FOR SEISMIC:NOT REQUIRED PER IBC 1705.13.1.1 DUE TO UTILIZATION OF ASCE 7-16 TABLE 12.2-1 LINE ITEM H.

SPECIAL INSPECTION FOR WIND:

1. REQUIRED PER IBS 2021 1705.12 DUE TO WIND SPEED EXCEED 150 MPH FOR EXPOSURE B.
2. PER IBC 2021 1704.4.3 - IDENTIFICATION AND INSPECTION OF THE ALL PRE-ENGINEERED METAL BUILDING SYSTEM RIGID BENTS, PORTAL FRAME COMPONENTS WHICH FORM THE PREENGINEERED METAL BUILDING LATERAL RESISTING SYSTEMS.
3. PER IBC 2021 1705.12.3 - PERIODIC SPECIAL INSPECTION IS REQUIRED FOR THE FOLLOWING:
    A. ROOF COVERING, ROOF DECK AND ROOF FRAMING CONNECTIONS.
    B. EXTERIOR WALL COVERING AND WALL CONNECTOINS TO ROOF AND FLOOR DIAPHRAGMS AND FRAMING.
4. PER IBC 2021 1709.5.1 EXTERIOR WINDOWS AND DOORS
    A. EXTERIOR WINDOWS AND SLIDING DOORS SHALL BE TESTED AND LABELED AS CONFORMING TO AAMA/WDMA/CSA101/I.S.2/A440.
    B. EXTERIOR WINDOW AND DOOR ASSEMBLIES SHALL BE TESTED IN ACCORDANCE TO E330.
5. PER 2021 1709.5.3 WINDBORNE DEBRIS PROTECTION
    A. PROTECTION OF EXTERIOR GLAZED OPENINGS IN BUILDINGS LOCATED IN WINDBORNE DEBRIS REGIONS IN ACCORDANCE WITH IBC 1609.2.

TESTS OF SOILS

1. PERIODIC SPECIAL INSPECTION SHALL BE PERFORMED ON THE FOLLOWING:

    A. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE BEARING CAPACITY.
    B. EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.
    C. PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.

2. CONTINUOUS SPECIAL INSPECTION SHALL BE PERFORMED ON THE FOLLOWING:
    A. VERIFY DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.

CONCRETE CONSTRUCTION:

1. PERIODIC SPECIAL INSPECTION SHALL BE PERFORMED ON THE FOLLOWING:

    A. FORMWORK FOR SHAPE, LOATION AND DIMENSIONS
    B. REINFORCING STEEL SIZE, SPACING AND PLACEMENT
    C. ANCHOR BOLTS SIZE, SPACING, AND EMBEDMENT
    D. POST INSTALLED ANCHORS SIZE, SPACING, EMBEDMENT, AND PROPER INSTALLATION TECHNIQUES.
    E. VERIFY CONCRETE TRUCK TICKETS ARE PROVIDING APPROVED MIX DESIGN.

2. CONTINUOUS SPECIAL INSPECTIONS SHALL BE PERFORMED ON THE FOLLOWING:

    A. CONCRETE SLUMP, AIR CONTENT, AND TEMPERATURE, AND TEST CYLINDER ACCORDING TO CONTRACT DOCUMENTS AND APPROVED MIX DESIGN.
    B. CONCRETE PLACEMENT FOR PROPER TECHNIQUE.

STEEL CONSTRUCTION:

1. STRUCTURAL STEEL
    A. VERIFY AND INSPECT ALL FIELD WELDS FOR COMPLIANCE WITH CONTRACT DOCUMENTS.
    B. VERIFY AND INSPECT ALL SLIP CRITICAL BOLTS.
    C. VERIFY BOLTS MEET THE REQUIREMENTS OF THE DESIGN DOCUMENTS AND FOR SNUG TIGHTENED JOINTS ENSURE ALL PLIES ARE IN FIRM CONTACT.

COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION

1. PER IBC 2021 1705.12.2 PERIODIC SPECIAL INSPECTION IS REQUIRED FOR FOR NAILING, BOLTING, ANCHORING AND OTHER FASTENING TO ELEMENTS OF THE MAIN WINDFORCE RESISTING SYSTEM, INCLUDING EXTERIOR WALL FRAMING.

PRE-CONSTRUCTION TESTS:

1. REFER TO THE TECHNICAL SPECIFICATIONS FOR REQUIRED MATERIAL AND ASSEMBLY TESTS FOR THIS PROJECT.

STRUCTURAL OBSERVATIONS

1. STRUCTURAL OBSERVATIONS ARE NOT REQUIRED DUE TO IBC 2021 1704.6.1
    A. SINCE THIS BUILDING IS NOT A RISK CATEGORY III OR IV BUILDING AS PER IBC 1704.6.1, STRUCTURAL OBSERVATIONS BY A REGISTERED DESIGN PROFESSIONAL.

REFERENCE DATUM AND FLOOD DATA:

1. STRUCTURAL PLANS ARE BASED ON TOP OF CONCRETE FOR THE GROUND FLOOR **0'-0" = 33.50' NGVD**.

2. PROJECT LOCATED IN FLOOD ZONE **X.**

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MOBILE, ALABAMA 36610

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B	10/01/2023	90% Submission
C	10/27/2023	100% Submission

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DRAWN BY: MJT
CHECKED BY: CEL
PROFESSION: STRUCTURAL
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED ENGINEER
No. 28305 PROFESSIONAL
10-30-2023
CHRISTOPHER EDWARD LYNER

SHEET TITLE

GENERAL NOTES (2/2)

SHEET NUMBER.

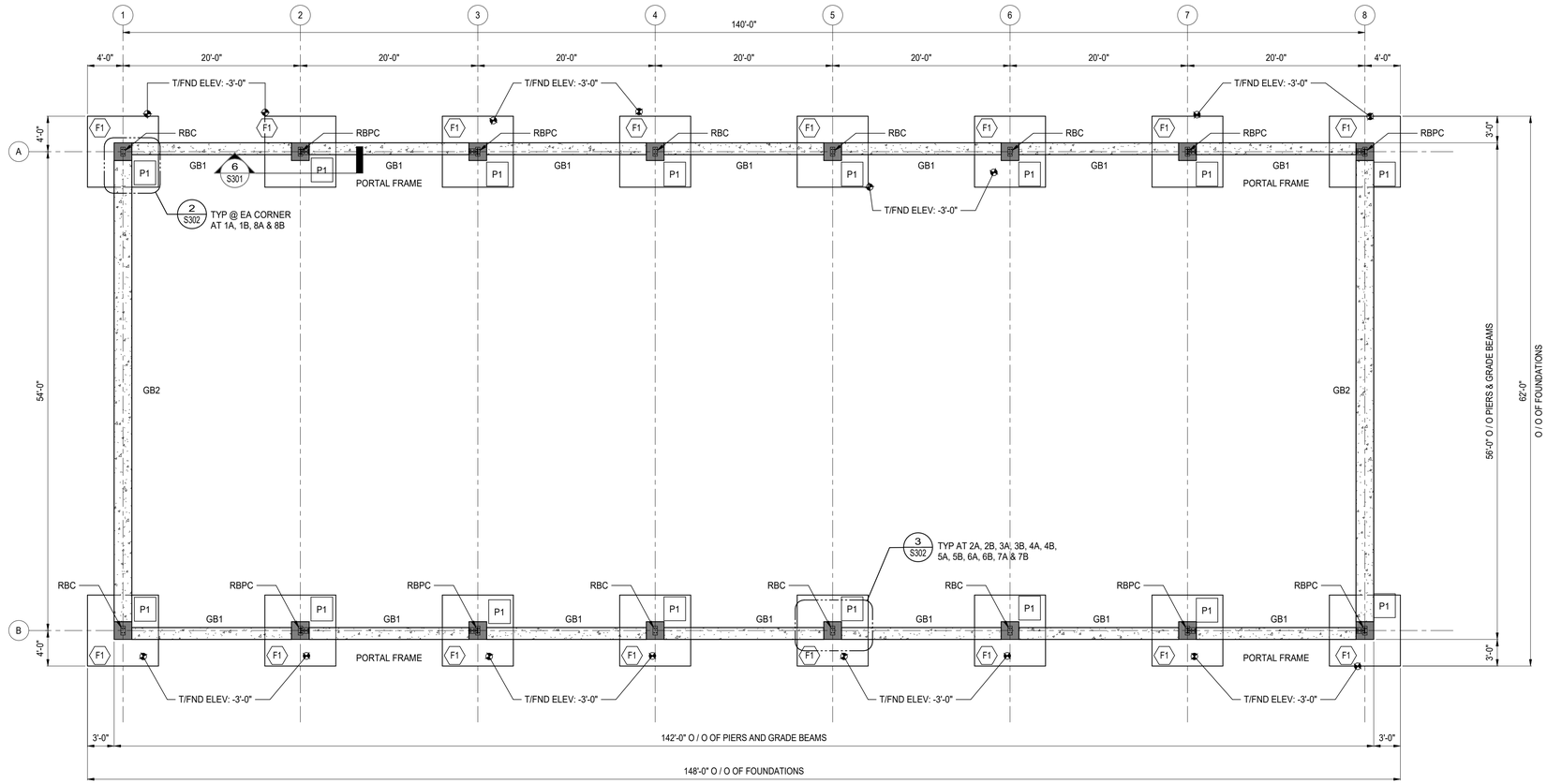
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PLAN NORTH

1 FOUNDATION PLAN

1/8" = 1'-0"

0 2' 4' 8' 16'

SCALE: 1/8" = 1'-0"

FOUNDATION NOTES:

1. TOP OF SLAB ON GRADE ELEVATION: 0'-0".
2. TOP OF PIER ELEVATION BENEATH TOP OF SLAB ON GRADE: -1'-0".
3. TOP OF GRADE BEAM ELEVATION BENEATH TOP OF SLAB ON GRADE: -1'-0".
4. TOP OF FOOTING ELEVATION BENEATH TOP OF SLAB ON GRADE: -3'-0".
5. BOTTOM OF FOOTING ELEVATION BENEATH TOP OF SLAB ON GRADE: -5'-0"
6. REFER TO CIVIL DRAWINGS FOR GROUND SLOPE, ELEVATIONS AND GRADING TOPOGRAPHY.
7. CENTER COLUMN AND BASE PLATE ON PIERS.
8. REFER TO GENERAL NOTES FOR DATUM REFERENCE ELEVATION FOR STRUCTURAL PLANS.
9. FOOTING SIZE SHOWN IS A MAXIMUM OUTSIDE DIMENSION AND THICKNESS. REFER TO PLAN FOR ACTUAL SHAPE.
10. START AND END REINF w/ CLEAR COVER NOT TO EXCEED MIN ALLOWED COVER ON ALL SIDES OF FOOTING. REMAINDER OF RENF SHALL BE PLACED w/ NO BAR SPACING EXCEEDING SPACING SHOWN IN SCHEDULE.
11. ANCHOR BOLTS SHALL BE HOT DIPPED GALVANIZED F1554 GRADE 36 THREADED RODS WITH GALVANIZED NUTS AND GALVANIZED STANDARD WASHERS. ANCHOR BOLTS SHALL BE MINIMUM OF 3/4" DIAMETER WITH A MINIMUM OF 22" OF EMBEDMENT AND 3" OF PROJECTION.

LEGEND - FOUNDATION PLAN:

F#	FOUNDATION TYPE MARK REFER TO FOUNDATION SCHEDULE
P#	COLUMN PIER TYPE MARK REFER TO PIER SCHEDULE
GB#	INDICATES GRADE BEAM MARK REFER TO GRADE BEAM SCHEDULE
RBC	INDICATES RIGID BENT COLUMN
RBPC	INDICATES RIGID BENT & PORTAL FRAME COMBINED COLUMN
	INDICATES TOP FOUNDATION ELEVATION
	INDICATES PIER, REFER TO PIER SCHEDULE
	INDICATES GRADE BEAM, REFER TO GRADE BEAM SCHEDULE

FOOTING SCHEDULE

MARK	SIZE	TOP REINF	BOT REINF	COMMENTS
F1	8'-0" x 8'-0" x 2'-0"	#6 @ 10" O.C. E.W.	#6 @ 10" O.C. E.W.	HOOK TOP BARS 90° TO THE BOTTOM MAT

PIER SCHEDULE

MARK	SIZE	LONGITUDINAL REINF	TIE SPACING	COMMENTS
P1	2'-0" x 2'-0" x 2'-0"	(12) #6 AROUND PERIMETER	(3) #4 @ 2" @ T &B BAL #4 @ 6" O.C.	HOOK PIER DOWELS TO BOTTOM MAT OF FOOTINGS

GRADE BEAM SCHEDULE

MARK	SIZE	LONGITUDINAL REINF	TIE SPACING	COMMENTS
GB1	1'-4" x 2'-0"	(3) #6 T&B OF GRADE BEAM	#4 STIRRUPS @ 10" O.C.	-
GB2	2'-0" x 2'-0"	(6) #6 T&B OF GRADE BEAM	#4 STIRRUPS @ 10" O.C.	-

CONTRACTORS NOTE:

THE METAL BUILDING FOUNDATION AND PIERS ARE SIZED BASED ON PRELIMINARY METAL BUILDING DESIGN AND REACTIONS. CONTRACTOR SHALL SUBMIT FINAL METAL BUILDING DRAWINGS AND REACTIONS (SIGNED AND SEALED) TO THE ENGINEER OF RECORD FOR A REVIEW PRIOR TO FOUNDATION STEEL FABRICATION AND CONSTRUCTION. IF REQUIRED, FOUNDATIONS AND PIER REVISIONS WILL BE ISSUED AND ADJUSTMENT IN CONTRACT MAY BE NEGOTIATED AS REQUIRED.

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No. 28305
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CHAD EDWARD LYNER
ENGINEER

SHEET TITLE

FOUNDATION PLAN

SHEET NUMBER.

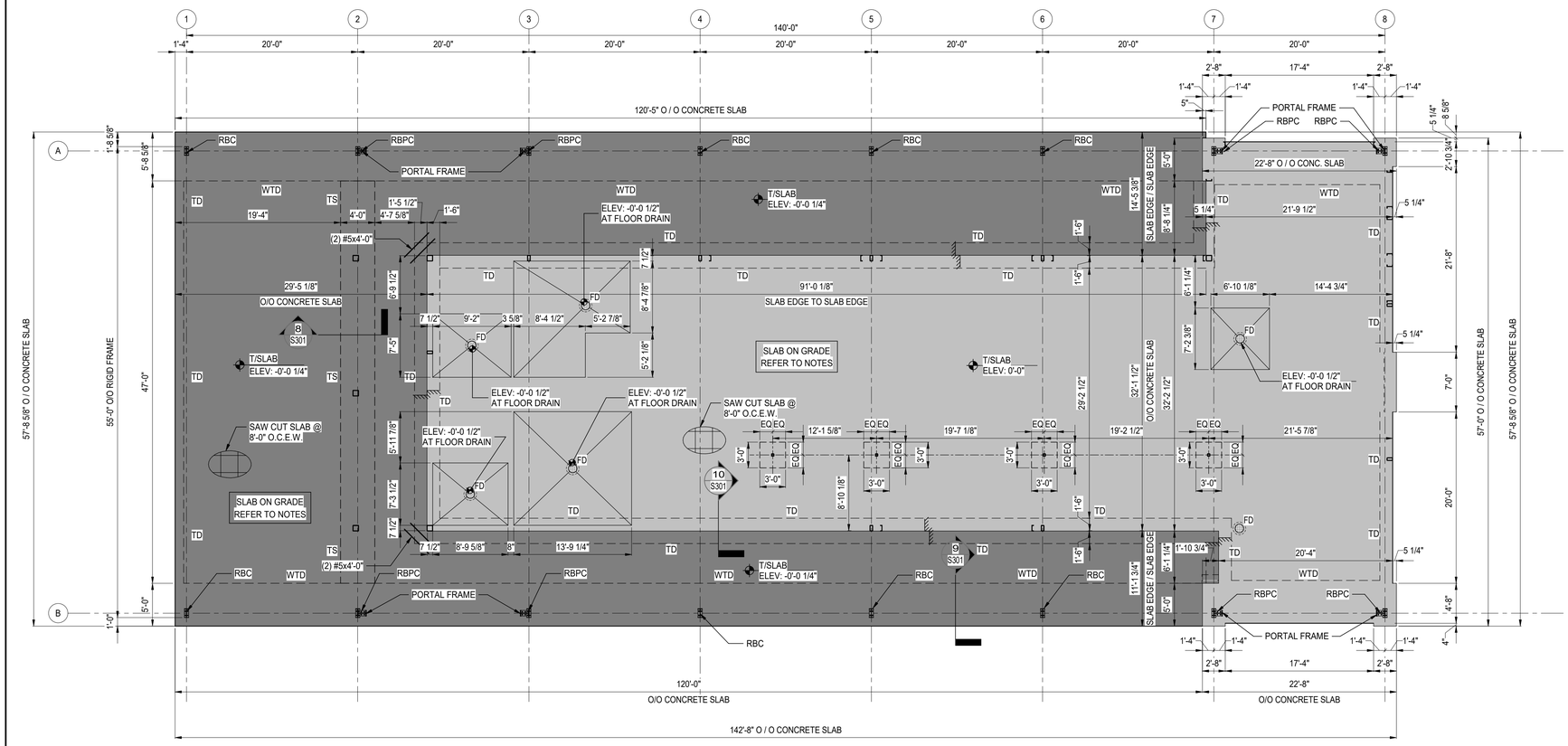
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PLAN NORTH

1 SLAB ON GRADE PLAN

1/8" = 1'-0"

0 2' 4' 8' 16'

SCALE: 1/8" = 1'-0"

SLAB ON GRADE NOTES:

1. REFER TO GENERAL NOTES FOR ADDITIONAL CONCRETE AND SLAB ON GRADE NOTES.
2. TOP OF SLAB ELEVATION: 0'-0" UNLESS NOTED OTHERWISE. REFER TO GENERAL NOTES FOR NGVD REFERENCE ELEVATION STRUCTURAL PLANS.
3. SLAB ON GRADE SHALL BE MINIMUM 4" THICK CONCRETE PLACED OVER 20 MIL VAPOR BARRIER ON COMPACTED FILL. REINFORCE SLAB ON GRADE WITH #3 @ 10" O.C. E.W. REFER TO TYPICAL DETAILS FOR ADDITIONAL REINFORCEMENT AND REQUIREMENTS. USE CHAIRS TO POSITION REINFORCING 1 1/2" BELOW TOP OF SLAB AND TO MAINTAIN THAT DEPTH DURING CONCRETE PLACEMENT.
4. COORDINATE ALL SLAB PENETRATION SIZES AND LOCATIONS WITH ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS.
5. COORDINATE RECESSED SLAB LOCATIONS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
6. SLOPE TOP OF SLAB TO FLOOR DRAINS, REFER TO ARCHITECTURAL PLANS.
7. "+-" INDICATED THICKNESS OF CONCRETE ABOVE T/SLAB.
8. CONTRACTOR SHALL SUBMIT CONTROL / CONSTRUCTION JOINT LOCATION PLAN TO EOR FOR REVIEW PRIOR TO PLACING IF DIFFERENT FROM WHAT IS SHOWN.
9. REFER TO S-301 FOR SLAB ON GRADE DETAILS.
10. REFER TO ARCHITECTURAL AND MECHANICAL FOR EQUIPMENT PAD SIZE AND ADDITIONAL REQUIREMENTS.

LEGEND - SLAB ON GRADE PLAN:

	INDICATES MAIN SLAB AT ELEV: 0'-0"
	INDICATES PORCH SLAB AT ELEV: -0'-0 1/4"
TD	INDICATES TURNDOWN SLAB REFER TO SHEET S-301 FOR DETAILS
WTD	INDICATES WIDE TURN DOWN SLAB REFER TO SHEET S-301 FOR DETAILS
TS	INDICATES THICKENED SLAB REFER TO SHEET S-301 FOR DETAILS
CJ	INDICATES SLAB CONTROL JOINT REFER TO SHEET S-301 FOR DETAILS
RBC	INDICATES RIGID BENT COLUMN
RBPC	INDICATES RIGID BENT & PORTAL FRAME COMBINED COLUMN
EL: X'-XX"	INDICATES TOP OF SLAB REFERENCE ELEVATION REFER TO GENERAL NOTES.
FD	INDICATES FLOOR DRAIN - SLOPE SLAB TO DRAIN AS INDICATED ON ARCHITECTURAL PLANS.
	INDICATES SLAB STEP
	INDICATES SLAB SLOPE (UP/DOWN)

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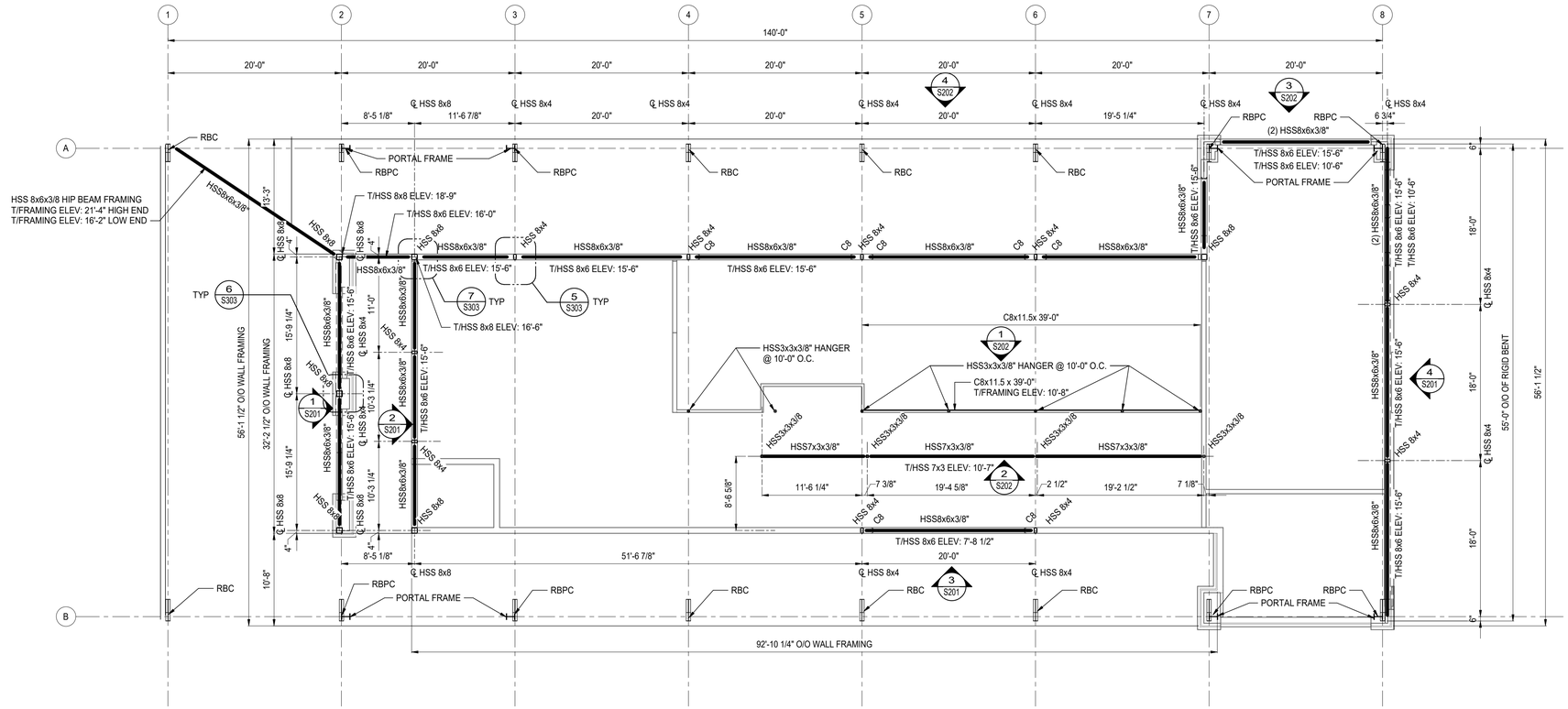
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PLAN NORTH

1 LOWER STEEL FRAMING PLAN FROM 0'-0" TO 15'-0"
1/8" = 1'-0"

0 2' 4' 8' 16'
SCALE: 1/8" = 1'-0"

LOW STEEL FRAMING PLAN NOTES:

1. TOP OF SLAB ON GRADE ELEVATION: 0'-0"
2. REFER TO CIVIL FOR FINISHED FLOOR ELEVATION COORDINATED WITH ELEVATION DATUM.
3. TOP OF HSS 8x4 AND HSS 8x8 COLUMNS SHALL BE 15'-0" UNLESS OTHERWISE NOTED.
4. TOP OF HSS 8x4 COLUMNS AT COLUMN LINES 5 AND 6 ALONG THE SOUTH FACE SHALL BE 7'-2 1/2". COORDINATE THIS ELEVATION WITH THE ARCHITECTURAL DRAWINGS, WINDOW AND FRAME ELEVATIONS ON THE ARCHITECTURAL DRAWINGS.
5. LOCATE COLUMNS AND COLUMN BASE PLATES AT CENTERLINE OF THE WALLS TO ENSURE FACE OF COLUMNS OR BASE PLATES DO NOT EXTEND PAST THE FACE OF THE STUDS.
6. HSS TO HSS WELDED CONNECTIONS SHALL BE A 1/4" ALL AROUND FILLET WELD. ALL EDGES OF THE HSS TO HSS SHALL BE COMPLETED SEALED.

LEGEND - LOW STEEL FRAMING PLAN:

HSS8x8	INDICATES HSS8x8x3/8 STEEL COLUMN
HSS8x4	INDICATES HSS8x4x3/8 STEEL COLUMN
HSS3x3	INDICATES HSS3x3x3/8 STEEL COLUMN
C8	INDICATES C8x18.75
HSS8x6	INDICATES HSS8x6x3/8
HSS7x3	INDICATES HSS7x3x3/8
RBC	INDICATES RIGID BENT COLUMN
RBPC	INDICATES RIGID BENT & PORTAL FRAME COMBINED COLUMN

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MOTT MACDONALD

AFRICATOWN WELCOME CENTER

CITY OF MOBILE

1959 BAY BRIDGE CUTOFF ROAD
MOBILE, ALABAMA 36610

REVISIONS DESCRIPTION

REV	DATE	
A	07/17/2023	30% Submission
B	10/01/2023	90% Submission
C	10/27/2023	100% Submission

DATE: OCTOBER 27, 2023
DESIGNED BY: MJT
DRAWN BY: MJT
CHECKED BY: CEL
PROFESSION: STRUCTURAL
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED
No. 28305
PROFESSIONAL
10-30-2023
ENGINEER
CHAD EDWARD LYNER

SHEET TITLE

LOWER STEEL FRAMING PLAN

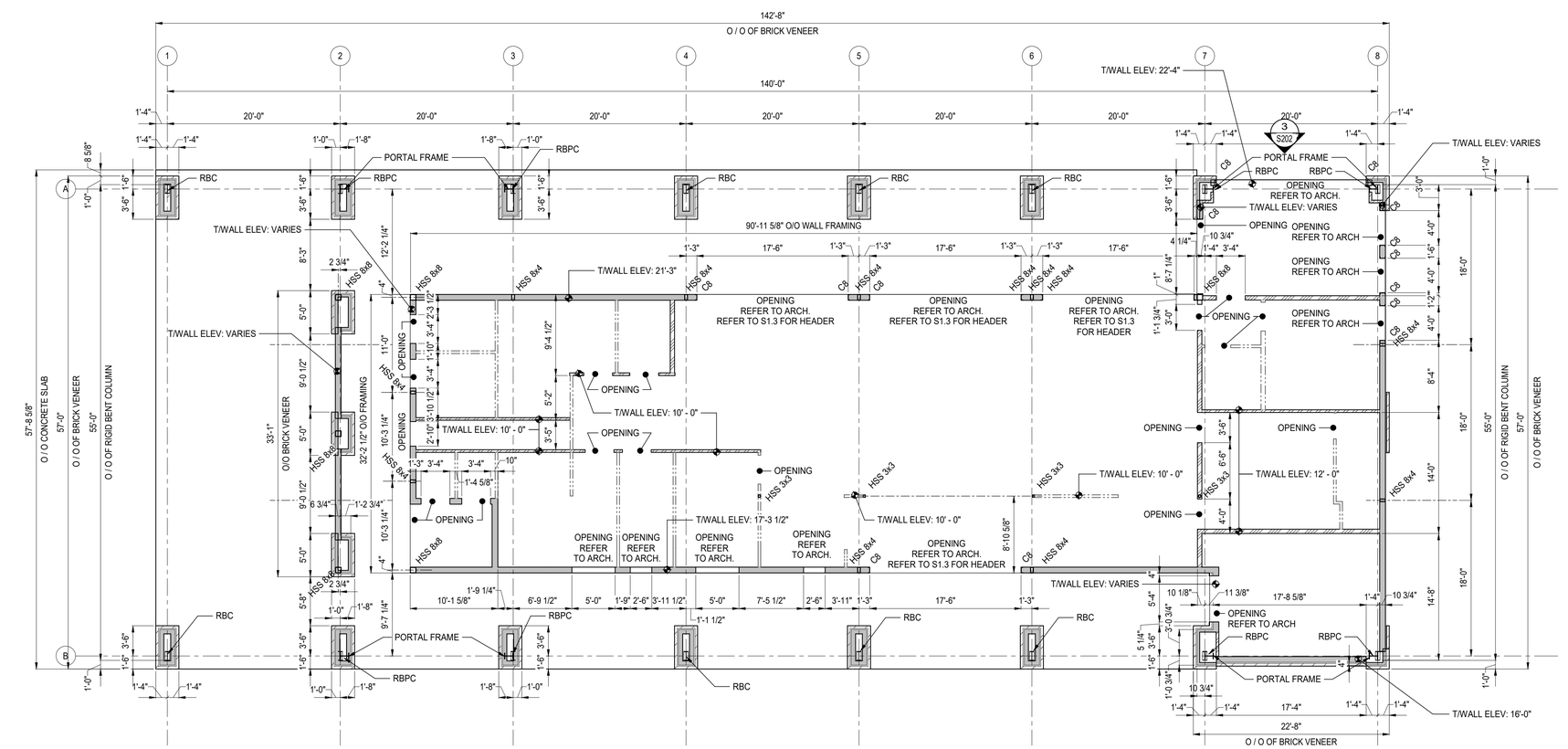
SHEET NUMBER

S103

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PLAN NORTH

1 WALL FRAMING PLAN FROM 0'-0" TO 21'-3"

1/8" = 1'-0"

0 2' 4' 8' 16'

SCALE: 1/8" = 1'-0"

WALL FRAMING PLAN NOTES:

1. REFER TO GENERAL NOTES SHEET AND TYPICAL DETAILS FOR ADDITIONAL LIGHT GAGE STEEL WALL NOTES.
2. TOP OF WALL ELEVATION, UON:
   A. HIGH (NORTH) EXTERIOR WALLS - 21'-3"
   B. LOW (SOUTH) EXTERIOR WALLS - 17'-3 1/2"
   C. INTERIOR WALLS - 10'-0"
   REFER TO GENERAL NOTES FOR NGVD REFERENCE ELEVATION STRUCTURAL PLANS.
3. COORDINATE ALL WALL OPENING SIZES AND LOCATIONS WITH ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS.
4. REFER TO S302 FOR LIGHT GAGE STEEL DETAILS.
5. REFER TO ARCHITECTURAL FOR ALL OPENING LOCATIONS, BOTTOM OF OPENINGS, TOP OF OPENINGS. OPENINGS ARE FOR STORE FRONT, DOORS, WINDOWS, LOUVERS. REFER TO MECHANICAL, PLUMBING OR ELECTRICAL DRAWINGS FOR ANCILLARY OPENINGS IN THE WALLS.
6. REFER TO S103 FOR PLAN VIEW ILLUSTRATING STOREFRONT HEADERS.

LEGEND - WALL FRAMING PLAN:

	INDICATES 8" CSJ 18-GAUGE (1 5/8" FLANGES) (33KSI) GALVANIZED LIGHT GAGE STEEL EXTERIOR WALL - SIZE AS INDICATED ON PLAN REFER TO S-302, WALL SECTIONS, AND WALL LAYOUT PLAN FOR ADDITIONAL REQUIREMENT AND WALL SIZE.
	INDICATES 6" 18 GAUGE (1 5/8" FLANGES) (33 KSI) GALVANIZED LIGHT GAGE STEEL BEARING WALLS.
	INDICATES 3 5/8" 18 GAUGE (1 5/8" FLANGES) (33 KSI) GALVANIZED LIGHT GAGE STEEL BEARING WALLS.
	INDICATES LIGHT GAGE STEEL NON-BEARING WALL REFER TO & VERIFY LOCATIONS W/ ARCHITECTURAL DRAWINGS.
	INDICATES BRICK VENEER, REFER TO & VERIFY LOCATION W/ ARCHITECTURAL DRAWINGS.
OPENING	INDICATES DOOR, WINDOW OR CASED OPENING IN WALL. REFER TO & VERIFY LOCATIONS W/ ARCHITECTURAL DRAWINGS.
RBC	INDICATES RIGID BENT COLUMN
RBPC	INDICATES RIGID BENT & PORTAL FRAME COMBINED COLUMN
HSS8x8	INDICATES HSS8x8x3/8 STEEL COLUMN
HSS8x4	INDICATES HSS8x4x3/8 STEEL COLUMN
HSS3x3	INDICATES HSS3x3x3/8 STEEL COLUMN

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M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED No. 28305 PROFESSIONAL 10-30-2023 ENGINEER CHAD EDWARD LYNER

SHEET TITLE
WALL FRAMING PLAN

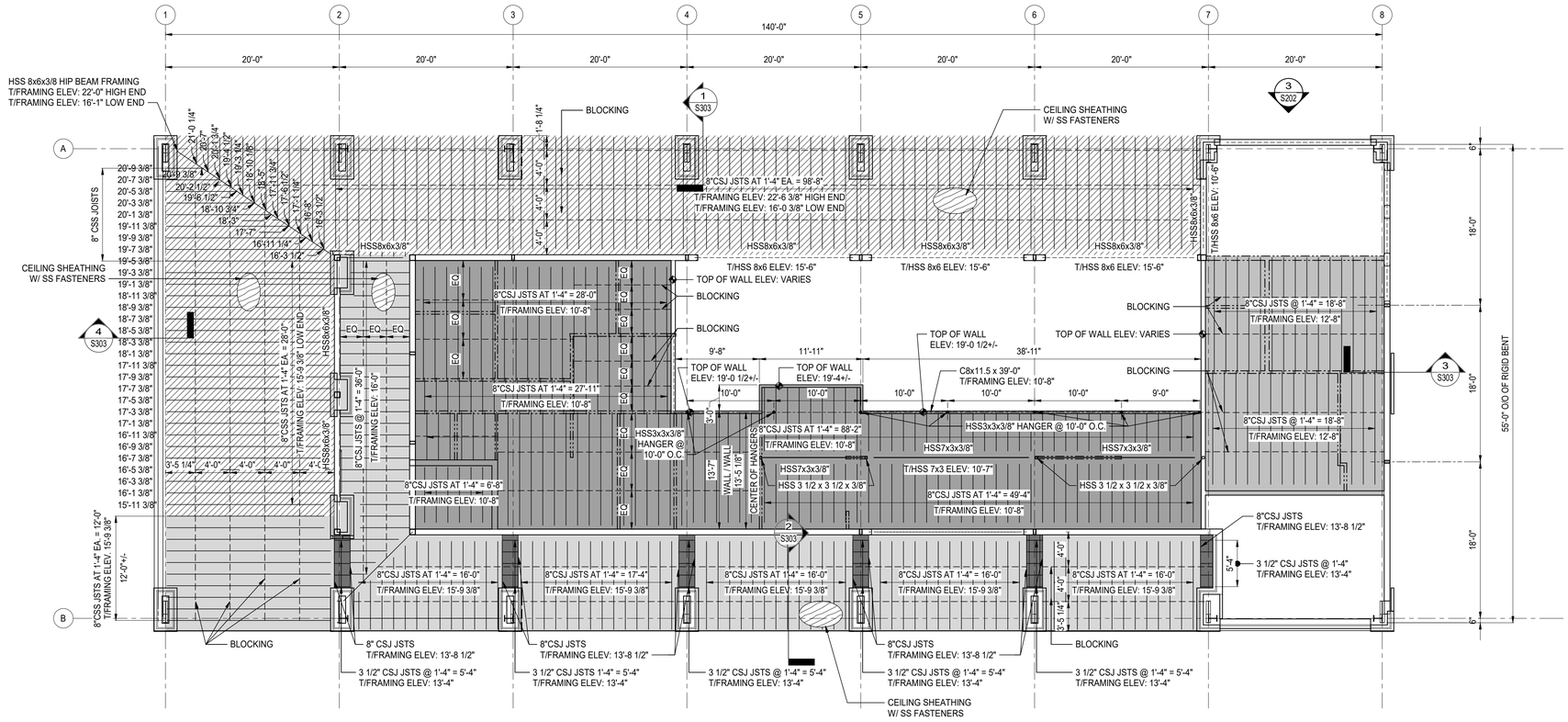
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N

PLAN NORTH

1 CEILING FRAMING PLAN

1/8" = 1'-0"

0 2' 4' 8' 16'

SCALE: 1/8" = 1'-0"

CEILING FRAMING NOTES:

1. ALL CEILING AND WALL LIGHT GAUGE FRAMING MEMBERS SHALL BE 33 KSI.
2. ALL CEILING AND WALL LIGHT GAUGE BLOCKING SHALL BE 33 KSI.
3. 8" CSJ JSTS = CEILING JOISTS, 8" DEEP, 18 GAUGE, 1 5/8" FLANGE MIN.
4. 8" CSS JSTS = CEILING JOISTS, 8" DEEP, 16 GAUGE, 3" FLANGE MIN.
5. 8" CSJ EXT. STUDS = STUDS, 8" DEEP, 18 GAUGE, 1 5/8" FLANGE MIN.
6. 6" CSJ INT STUDS = STUDS, 6" DEEP, 18 GAUGE, 1 5/8" FLANGE MIN.
7. 3 5/8" CSJ INT. STUDS = 3 5/8", 18 GAUGE, 1 5/8" FLANGE MIN.
8. 8" JOIST BLOCKING = 8" DEEP TRACK, 18 GAUGE, 1 1/4" FLANGES MIN.
9. 6" JOIST BLOCKING = 6" DEEP TRACK, 18 GAUGE, 1 1/4" FLANGES MIN.
10. 3 5/8" JOIST BLOCKING = 3 5/8" DEEP TRACK, 18 GAUGE, 1 1/4" FLANGES MIN.
11. BLOCKING IN ALL WALLS SHALL BE AT 4'-0" ON CENTER TO LINE UP WITH THE EDGES OF THE SHEATHING.
12. BLOCKING IN ALONG LENGTH OF JOISTS SHALL BE PLACED AT 4'-0" ON CENTER TO LINE UP WITH THE EDGES OF THE SHEATHING.
13. ALL LIGHT GAUGE FRAMING EXPOSED TO EXTERIOR ENVIRONMENTAL CONDTIONS SHALL HAVE A G90 COATING. ALL LIGHT GAUGE FRAMING WITHIN THE EXTERIOR VENEER AND ENVELOPE OF THE BUILDING SHALL HAVE A G60 COATING.

LEGEND - CEILING FRAMING PLAN:

- INDICATES CEILING T/FRAMING AT ELEV: 16'-0"
- INDICATES CEILING T/FRAMING AT ELEV: 12'-8"
- INDICATES CEILING T/FRAMING AT ELEV: 10'-8"
- INDICATES CEILING T/FRAMING AT ELEV: 13'-4"
- INDICATES CEILING T/FRAMING AT ELEV: VARIES
- INTERIOR WALLS BELOW
- FULL DEPTH LIGHT GAUGE JOIST BLOCKING, REFER TO NOTES ABOVE ABOUT FULL DEPTH JOIST BLOCKING.
- CEILING SHEATHING W/ FASTENERS = 5/8" EXTERIOR STRUCTURAL I PLYWOOD. ATTACH PLYWOOD TO METAL STUDS W/ SIMPSON STRONG TIE #12x2" TYPE 410 STAINLESS STEEL FASTENERS (F12C200FDM) AT 6" O.C. AROUND EDGES AND 12" O.C. AT INTERMEDIATE FILL REGIONS.

NOTE:

- PEMB EXTERIOR CEILING LOADING ALONG COLUMN LINE A - NORTH FACE: 133 PLF
- PEMB EXTERIOR CEILING LOADING ALONG COLUMN LINE B - SOUTH FACE: 114 PLF
- PEMB EXTERIOR CEILING LOADING ALONG COLUMNE LINE 1 - WEST FACE: 200 PLF

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CHAD EDWARD LYNER
ENGINEER

SHEET TITLE

CEILING FRAMING PLAN

SHEET NUMBER

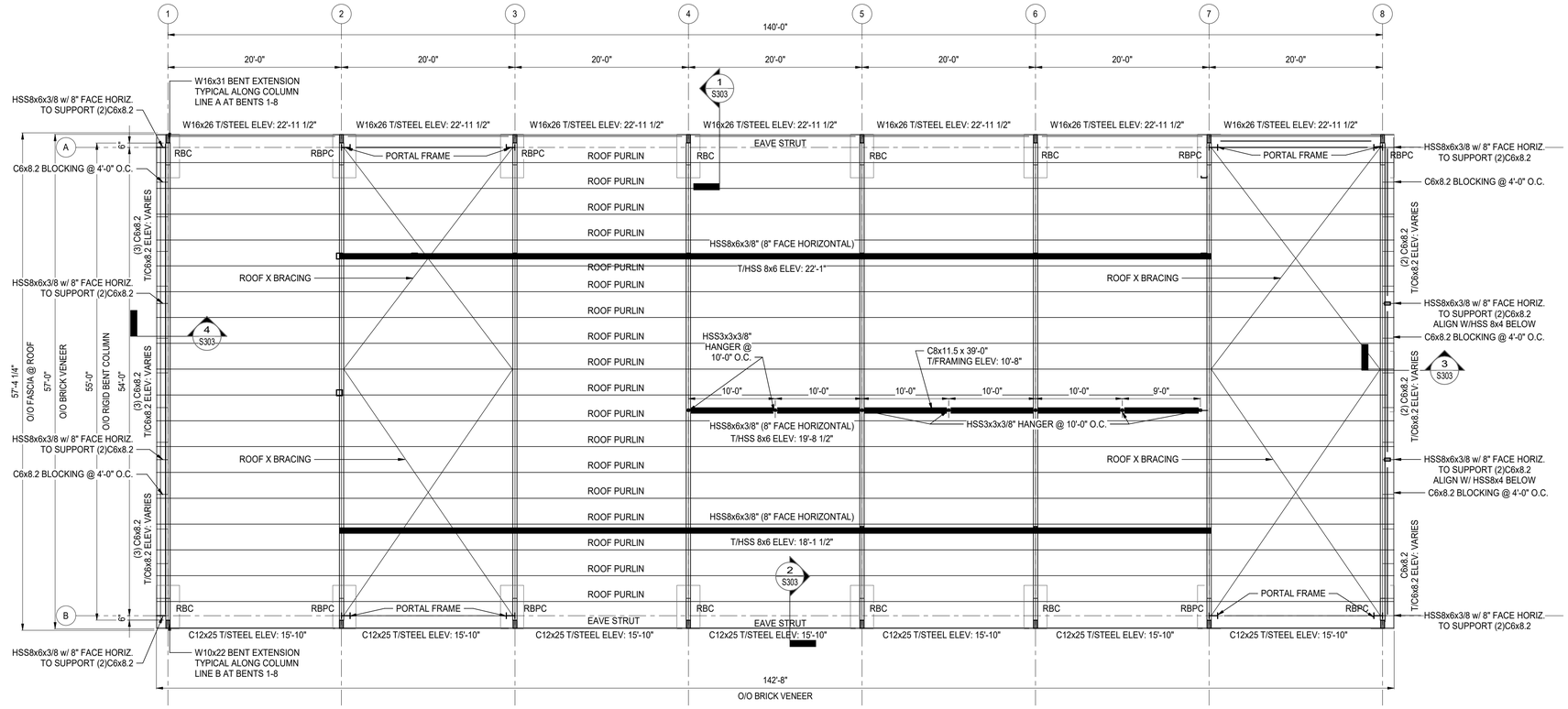
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PLAN NORTH

1 ROOF FRAMING PLAN

1/8" = 1'-0"

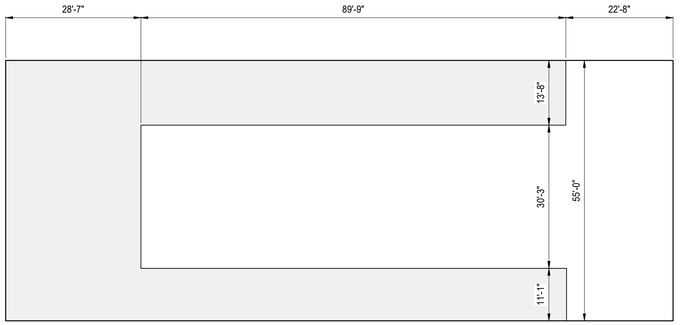
0 2' 4' 8' 16'

SCALE: 1/8" = 1'-0"

LEGEND - ROOF FRAMING PLAN:

RBC INDICATES RIGID BENT COLUMN

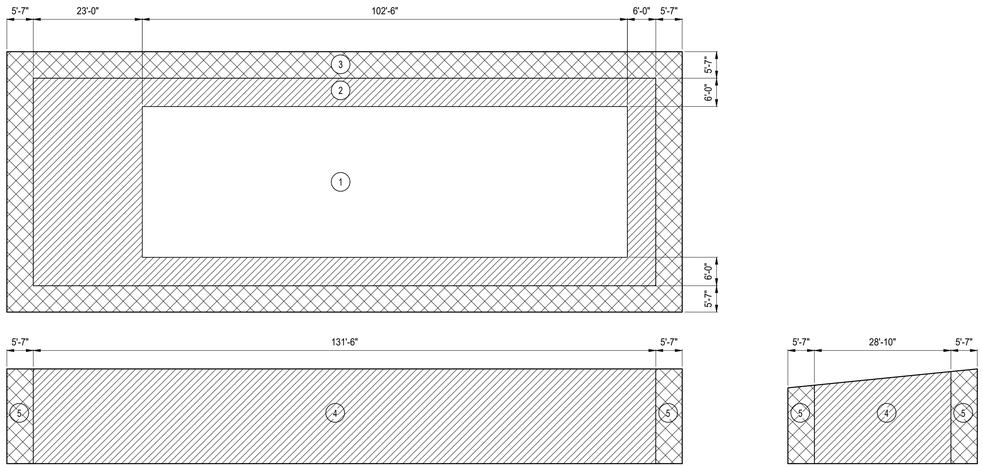
RBPC INDICATES RIGID BENT & PORTAL FRAME COMBINED COLUMN



CEILING UPLIFT PRESSURES:

CEILING UPLIFT PRESSURES SHALL BE 49.4 PSF. CEILING PRESSURES SHOWN ARE FOR ULTIMATE WIND PRESSURES. FOR ALLOWABLE WIND PRESSURES MULTIPLE THE PRESSURES SHOWN BY 0.6.

CEILING UPLIFT PLAN



ROOF AND WALL PRESSURES

ROOF PRESSURES HIGH ROOF			
ZONE	EFFECTIVE AREA (FT^2)	PRESSURE (PSF) POSITIVE	PRESSURE (PSF) NEGATIVE
1	10 SF	+25.2 PSF	-68.4 PSF
	20 SF	+25.2 PSF	-63.9 PSF
	50 SF	+25.2 PSF	-58.0 PSF
	100 SF	+25.2 PSF	-53.4 PSF
	200 SF	+25.2 PSF	-51.6 PSF
	500 SF	+25.2 PSF	-51.6 PSF
2	10 SF	+37.8 PSF	-90.3 PSF
	20 SF	+37.8 PSF	-82.6 PSF
	50 SF	+37.8 PSF	-78.9 PSF
	100 SF	+37.8 PSF	-78.9 PSF
	200 SF	+37.8 PSF	-56.8 PSF
	500 SF	+37.8 PSF	-51.6 PSF
3	10 SF	+50.3 PSF	-146.3 PSF
	20 SF	+50.3 PSF	-146.3 PSF
	50 SF	+37.8 PSF	-91.6 PSF
	100 SF	+37.8 PSF	-78.9 PSF
	200 SF	+25.2 PSF	-64.5 PSF
	500 SF	+25.2 PSF	-51.6 PSF

WALL PRESSURES			
ZONE	EFFECTIVE AREA (FT^2)	PRESSURE (PSF) POSITIVE	PRESSURE (PSF) NEGATIVE
4	10 SF	+34.9 PSF	-37.8 PSF
	20 SF	+33.3 PSF	-36.3 PSF
	50 SF	+31.3 PSF	- 34.2 PSF
	100 SF	+29.8 PSF	-34.2 PSF
	200 SF	+28.2 PSF	-32.7 PSF
	500 SF	+26.2 PSF	-29.1 PSF
5	10 SF	+34.9 PSF	-46.5 PSF
	20 SF	+33.3 PSF	-43.4 PSF
	50 SF	+31.3 PSF	-39.3 PSF
	100 SF	+29.8 PSF	-36.3 PSF
	200 SF	+28.2 PSF	-33.2 PSF
	500 SF	+26.2 PSF	-29.1 PSF

NOTES:

1. WALL SECTION 5 EXTENDS FROM THE BUILDING CORNERS A DISTANCE OF 4'-0". WALL SECTION 4 IS THE REMAINDER OF THE WALL.
2. COMPONENT AND CLADDING PRESSURES SHOWN ARE FOR ULTIMATE WIND PRESSURES FOR ALLOWABLE WIND PRESSURES MULTIPLE THE PRESSURES SHOWN BY 0.6.

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ALABAMA LICENSED No. 28305 PROFESSIONAL 10-30-2023 ENGINEER CHAD EDWARD LYNER

SHEET TITLE

ROOF FRAMING PLAN

SHEET NUMBER.

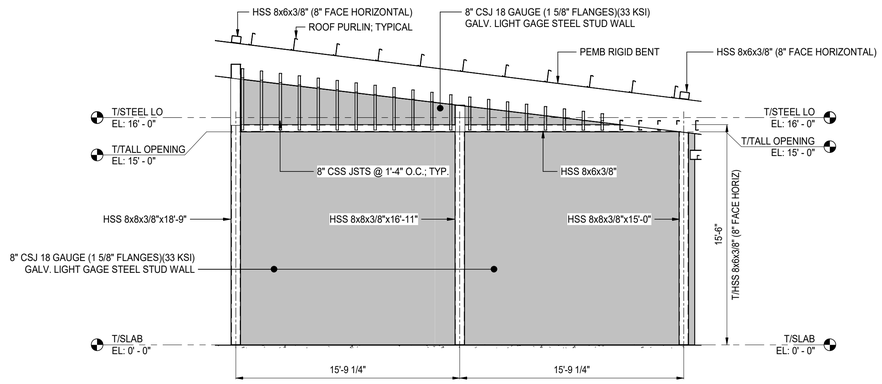
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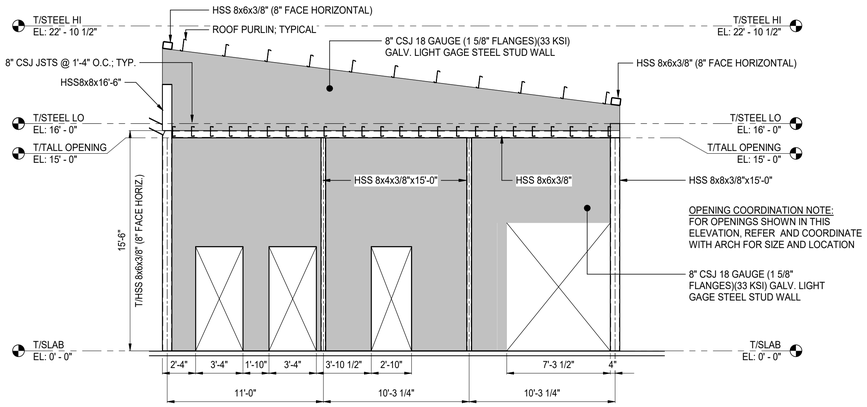
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1 S201 STEEL FRAMING ELEVATION AT COLUMN LINE 2 (LOOKING EAST)
3/16" = 1'-0"

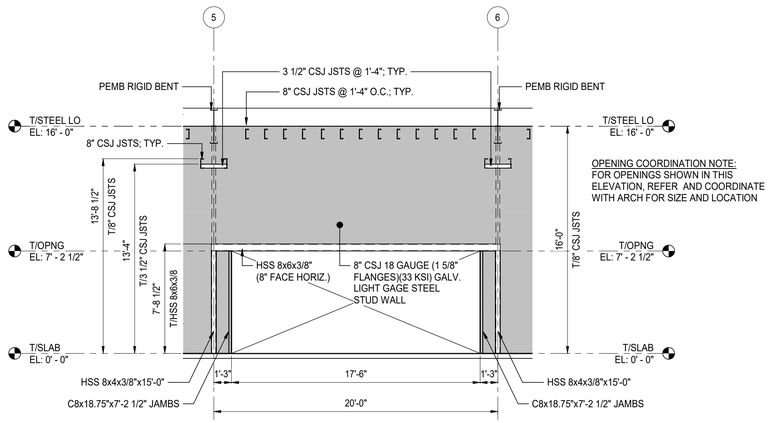
SCALE: 3/16" = 1'-0"

NOTE: COLUMN LENGTHS SHOWN ARE THE BASIS OF DESIGN. CONTRACTOR SHALL COORDINATE THE HSS8x6 COLUMN LENGTHS TO THE PEMB FRAME WITH THE PEMB SHOP DRAWINGS. ONCE THE PEMB SHOP DRAWINGS HAVE BEEN APPROVED AND FINALIZED, THE HSS COLUMN LENGTHS SHALL BE FINALIZED. COLUMN LENGTHS SHALL BE MODIFIED AS REQUIRED AT NO EXPENSE TO THE OWNER OR ENGINEER.



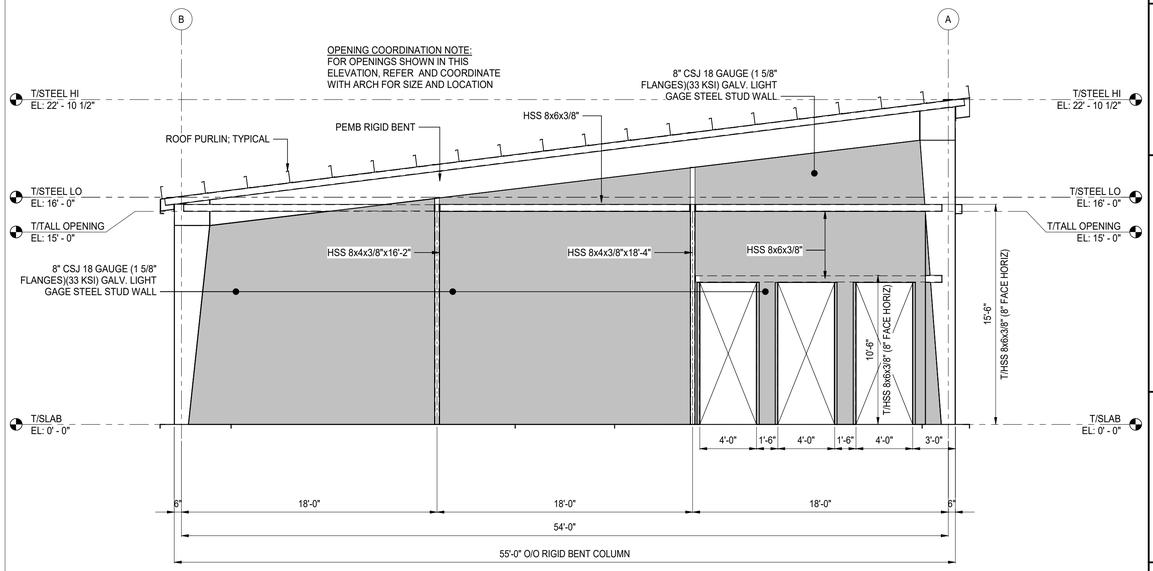
2 S201 STEEL FRAMING ELEVATION BETWEEN COLUMN LINE 2 AND 3 (LOOKING EAST)
3/16" = 1'-0"

SCALE: 3/16" = 1'-0"



3 S201 STEEL FRAMING ELEVATION AT SOUTH CURTAINWALL (LOOKING NORTH)
3/16" = 1'-0"

SCALE: 3/16" = 1'-0"



4 S201 STEEL FRAMING ELEVATION AT COLUMN LINE 8 (LOOKING WEST)
3/16" = 1'-0"

SCALE: 3/16" = 1'-0"

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ALABAMA LICENSED CHAD EDWARD LYNER ENGINEER
No. 28305
PROFESSIONAL
10-30-2023

SHEET TITLE

ELEVATIONS

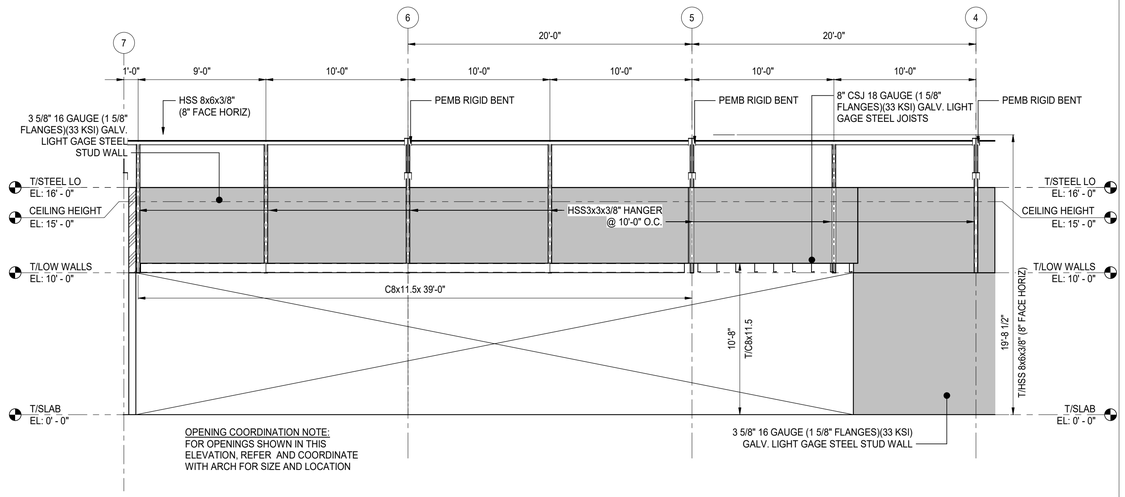
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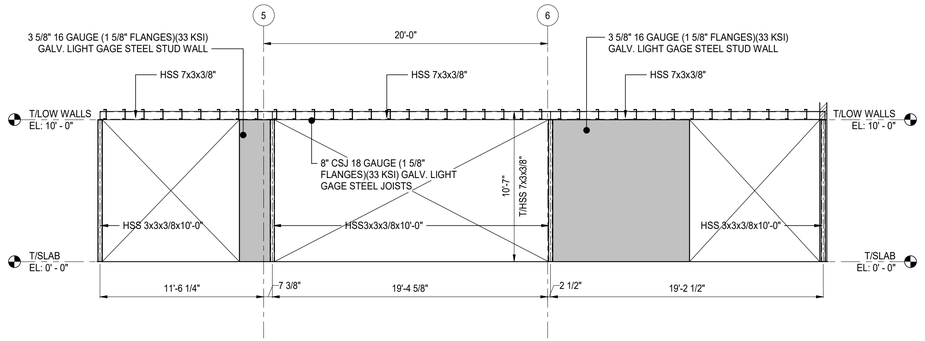
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1 S202 STEEL FRAMING ELEVATION AT INTERIOR HANGERS (LOOKING SOUTH)
3/16" = 1'-0"

SCALE: 3/16" = 1'-0"

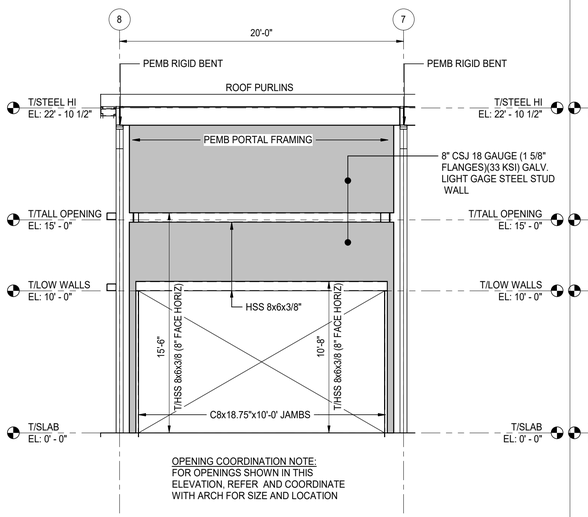
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OPENING COORDINATION NOTE:
FOR OPENINGS SHOWN IN THIS ELEVATION, REFER AND COORDINATE WITH ARCHITECTURE FOR SIZE AND LOCATIONS.

2 S202 STEEL FRAMING ELEVATION AT INTERIOR COLUMNS (LOOKING NORTH)
3/16" = 1'-0"

SCALE: 3/16" = 1'-0"

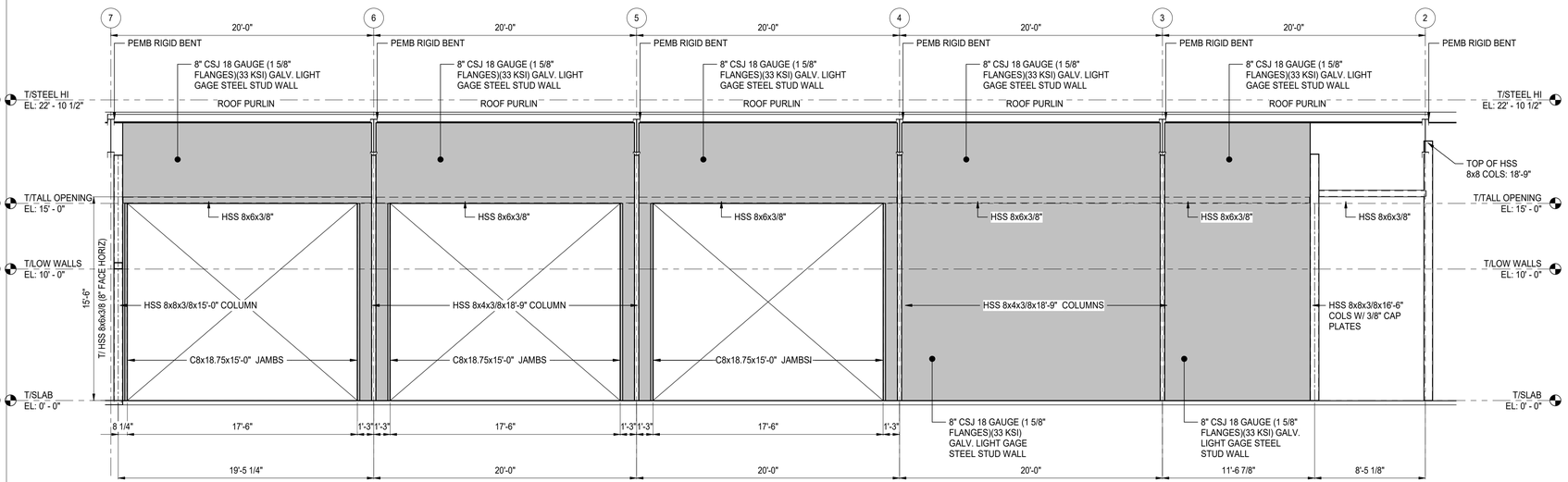


OPENING COORDINATION NOTE:
FOR OPENINGS SHOWN IN THIS ELEVATION, REFER AND COORDINATE WITH ARCH FOR SIZE AND LOCATION

LOOKING SOUTH

3 S202 STEEL FRAMING ELEV. AT NORTH SIDE
3/16" = 1'-0"

SCALE: 3/16" = 1'-0"



OPENING COORDINATION NOTE:
FOR OPENINGS SHOWN IN THIS ELEVATION, REFER AND COORDINATE WITH ARCH FOR SIZE AND LOCATION

4 S202 STEEL FRAMING ELEVATION AT NORTH SIDE (LOOKING SOUTH)
3/16" = 1'-0"

SCALE: 3/16" = 1'-0"

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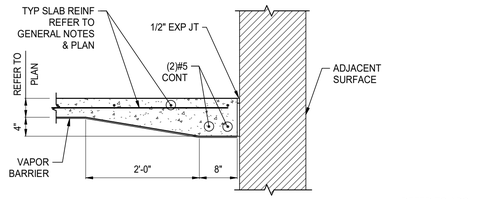
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S202

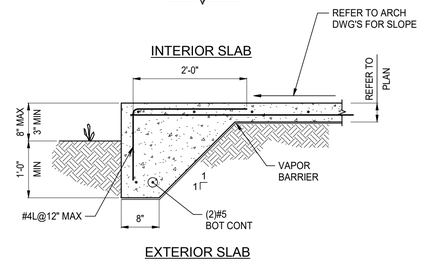
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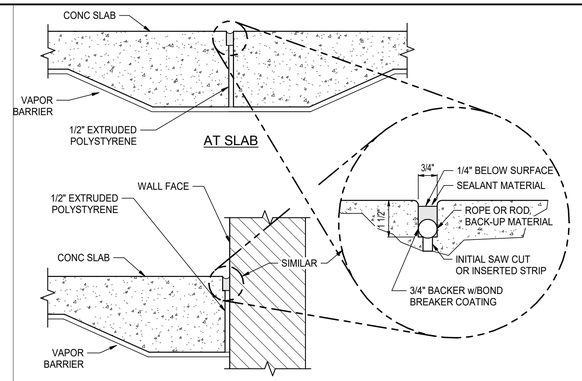
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1 S301 TURNDOWN AT SLAB EDGE
3/4" = 1'-0"

SCALE: 3/4" = 1'-0"



NOTE:

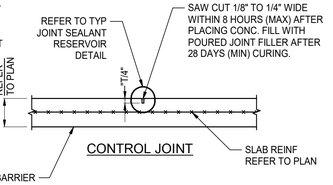
SEALANT MATERIAL SHALL BE A FIELD MOLDED SEALANT OF ONE OF THE FOLLOWING TYPES:

1. HOT APPLIED THERMOPLASTIC ASPHALT - RUBBER COMPOUNDS MEETING ASTM 1190.
2. HOT POURED ELASTOMERIC TYPE SEALANTS - MEETING ASTM D3406.
3. COLD APPLIED, MASTIC SINGLE OR MULTIPLE - COMPONENT SEALANTS METTING ASTM D1850.

2 S301 TYPICAL SLAB 1/2" EXP. JOINT (EJ)
1 1/2" = 1'-0"

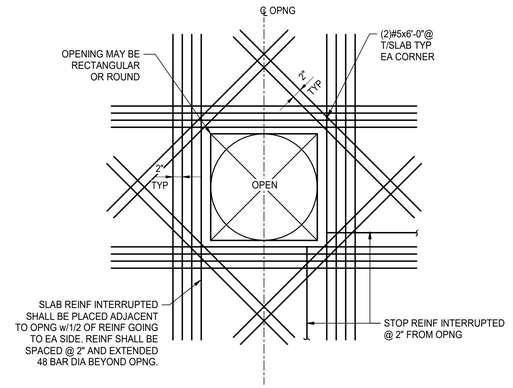
SCALE: 1 1/2" = 1'-0"

NOTES:
1. PLACE CONTROL JOINTS AT CHANGES IN SLAB WIDTH, AT COLUMN BLOCKOUTS, COLUMN CENTERLINES, & AT REGULARLY SPACED INTERVALS.
2. MAXIMUM SPACING OF JOINTS SHALL NOT EXCEED 8'-0" FOR 4" SLABS, 12'-0" FOR 6" SLABS, AND 16'-0" FOR 8" SLABS, IN EITHER DIRECTION.
3. DO NOT EXCEED A 2 TO 1 WIDTH TO LENGTH RATIO.
4. USE CONSTRUCTION JOINTS WHEN THERE IS A BREAK IN SLAB POURING OPERATIONS EXCEEDING 30 MINUTES.



3 S301 TYPICAL SLAB ON GRADE CONTROL JOINT (CJ)
3/4" = 1'-0"

SCALE: 3/4" = 1'-0"



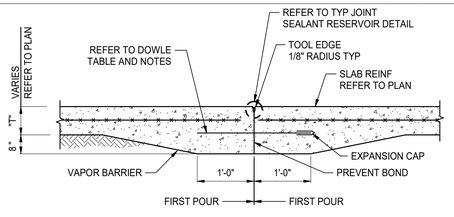
4 S301 ADDITIONAL REINF AT SLAB OPENING
3/4" = 1'-0"

SCALE: 3/4" = 1'-0"

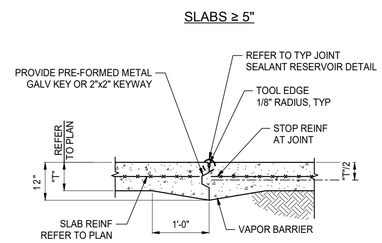
DOWEL TABLE			
"T" SLAB DEPTH (INCHES)	DIAMETER (INCHES)	TOTAL LENGTH (INCHES)	CENTER TO CENTER SPACING (IN)
5	5/8	12	12
6	3/4	14	12
7	7/8	14	12
8	1	14	12
9	1 1/8	16	12
10	1 1/4	18	12
11	1 3/8	18	12
12	1 1/2	20	12

DOWEL NOTES:

1. DOWELS SHALL BE PLAIN ROUND BARS EQUIVALENT TO ASTM A615 WITH A CORROSION RESISTANT COATING.
2. ONE-HALF (1/2) OF EACH BAR SHALL BE COVERED WITH ONE COAT TAR. PLACE EXPANSION CAP ON COATED SIDE.
3. DOWELS SHALL BE PLACED PARALLEL TO THE CENTERLINE AND SURFACE OF THE SLAB. TOLERANCE OF THE PLACEMENT SHALL BE ±1/4".



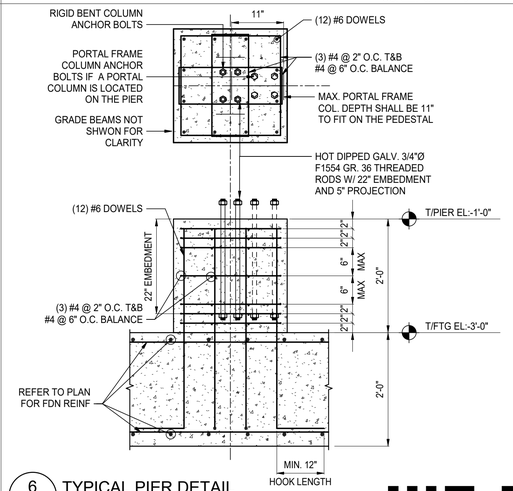
SLABS ≥ 5"



SLABS < 5"

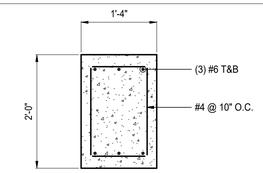
5 S301 TYPICAL SLAB ON GRADE CONSTRUCTION JOINT (2 Types w/Table)
3/4" = 1'-0"

SCALE: 3/4" = 1'-0"



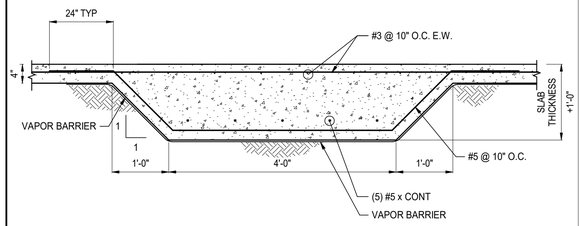
6 S301 TYPICAL PIER DETAIL
3/4" = 1'-0"

SCALE: 3/4" = 1'-0"



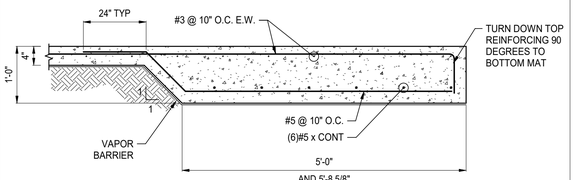
7 S301 TYPICAL GRADE BEAM DETAIL
3/4" = 1'-0"

SCALE: 3/4" = 1'-0"



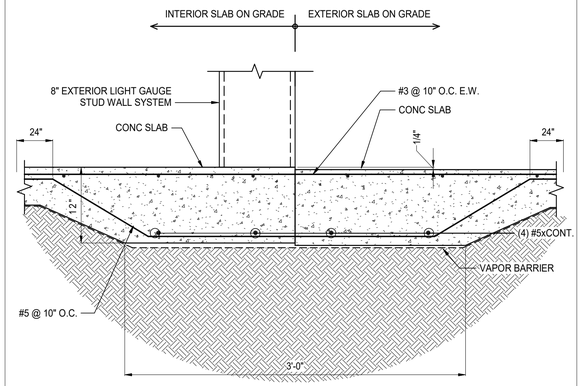
8 S301 TYPICAL THICKENED SLAB (TS)
3/4" = 1'-0"

SCALE: 3/4" = 1'-0"



9 S301 TURNDOWN AT SLAB EDGE
3/4" = 1'-0"

SCALE: 3/4" = 1'-0"



10 S301 BACK TO BACK SLAB TURNDOWNS
1 1/2" = 1'-0"

SCALE: 1 1/2" = 1'-0"

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AFRICATOWN WELCOME CENTER
CITY OF MOBILE
1959 BAY BRIDGE CUTOFF ROAD
MOBILE, ALABAMA 36610

REVISIONS DESCRIPTION	REV	DATE
30% Submission	A	07/17/2023
90% Submission	B	10/01/2023
100% Submission	C	10/27/2023

DATE: OCTOBER 27, 2023
DESIGNED BY: MJT
DRAWN BY: MJT
CHECKED BY: CEL
PROFESSION: STRUCTURAL
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED ENGINEER CHAD EDWARD LYNER
No. 28305 PROFESSIONAL
10-30-2023

SHEET TITLE
CONCRETE DETAILS

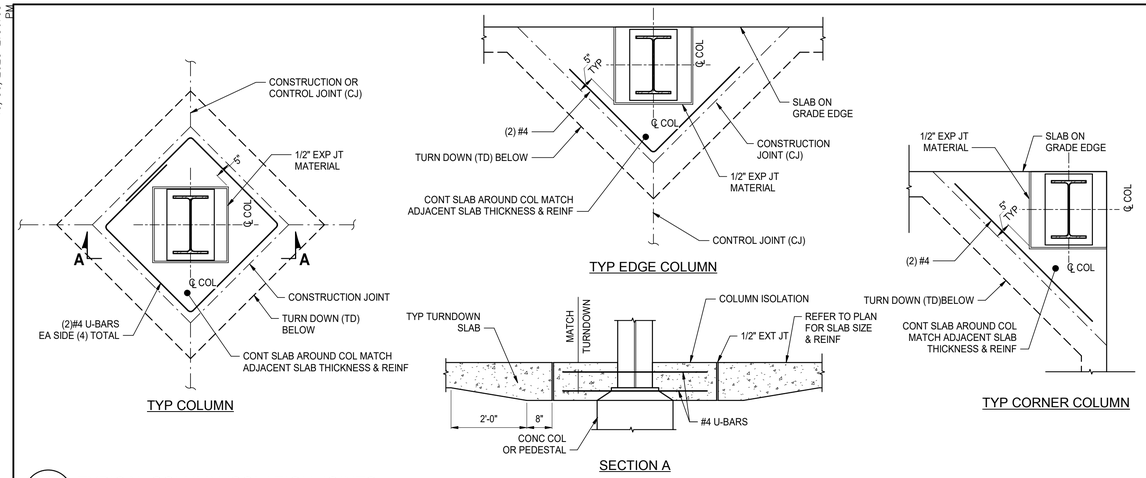
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S301

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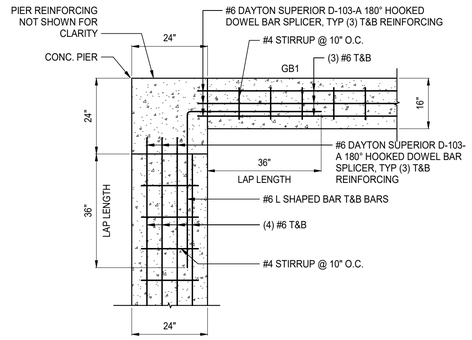
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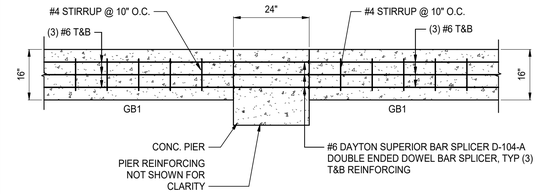
1 S302 TYPICAL COLUMN ISOLATION JOINTS
1/2" = 1'-0"

SCALE: 1/2" = 1'-0"



2 S302 TERMINATION OF GRADE BEAMS TO CORNER PILE CAP
1/2" = 1'-0"

SCALE: 1/2" = 1'-0"



3 S302 TERMINATION OF GRADE BEAMS TO INTERIOR PILE CAP
1/2" = 1'-0"

SCALE: 1/2" = 1'-0"

4 S302 TYPICAL THICKENED SLAB (TS) UNDER HSS3x3x3/8" COLUMN
3/4" = 1'-0"

SCALE: 3/4" = 1'-0"

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MOTT MACDONALD

AFRICATOWN WELCOME CENTER
CITY OF MOBILE
1959 BAY BRIDGE CUTOFF ROAD
MOBILE, ALABAMA 36610

DATE	REV.	REVISIONS DESCRIPTION

DATE: OCTOBER 27, 2023
DESIGNED BY: MJT
DRAWN BY: MJT
CHECKED BY: CEL
PROFESSION: STRUCTURAL
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED
No. 28305
PROFESSIONAL
10-30-2023
CHAD EDWARD LYNER
ENGINEER

SHEET TITLE
CONCRETE DETAILS

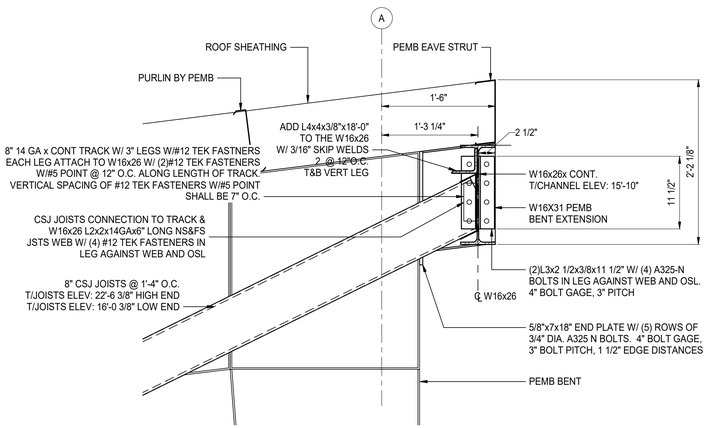
SHEET NUMBER
S302

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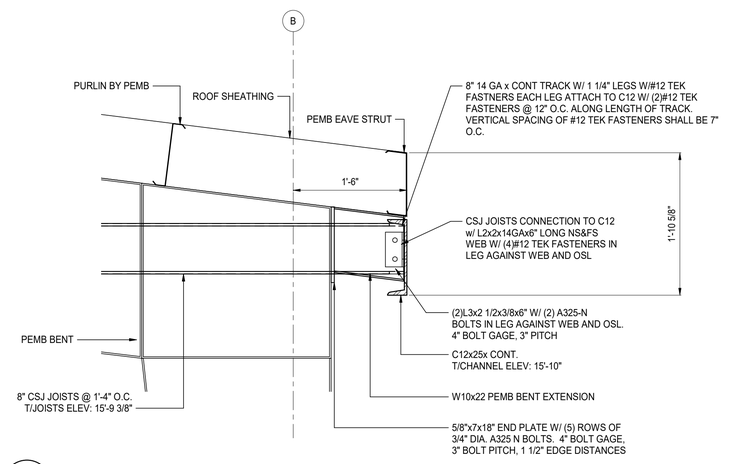
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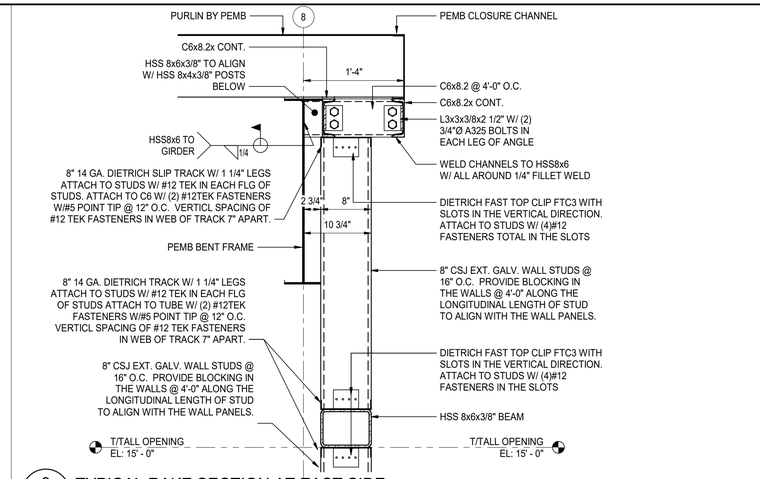
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1 S303 TYPICAL EAVE SECTION AT NORTH SIDE
1" = 1'-0"
SCALE: 1" = 1'-0"



2 S303 TYPICAL EAVE SECTION AT SOUTH SIDE
1" = 1'-0"
SCALE: 1" = 1'-0"



3 S303 TYPICAL RAKE SECTION AT EAST SIDE
1" = 1'-0"
SCALE: 1" = 1'-0"

4 S303 TYPICAL RAKE SECTION AT WEST SIDE
1" = 1'-0"
SCALE: 1" = 1'-0"

5 S303 TYP. HSS8x4x3/8" BASE PLATE DETAIL
1" = 1'-0"
SCALE: 1" = 1'-0"

6 S303 TYP. HSS8x8x3/8" BASE PLATE DETAIL
1" = 1'-0"
SCALE: 1" = 1'-0"

7 S303 TYP. HSS8x8x3/8" BASE PLATE DETAIL AT WALL CORNERS
1" = 1'-0"
SCALE: 1" = 1'-0"

8 S303 TYP. HSS COL TO BEAM CONN
1" = 1'-0"
SCALE: 1" = 1'-0"

9 S303 TYP. HEADER SPLICE DETAIL
1" = 1'-0"
SCALE: 1" = 1'-0"

10 S303 TYP. HANGER CONNECTIONS EA END
1" = 1'-0"
SCALE: 1" = 1'-0"

11 S303 HSS8x6 CONNECTION TO PEMB GIRDER
1" = 1'-0"
SCALE: 1" = 1'-0"

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AFRICATOWN WELCOME CENTER
CITY OF MOBILE
1959 BAY BRIDGE CUTOFF ROAD
MOBILE, ALABAMA 36610

REVISIONS

DESCRIPTION	DATE	REV

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PROFESSION: STRUCTURAL
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED
No. 28305 PROFESSIONAL
10-30-2023
ENGINEER
CHAD EDWARD LYNER

SHEET TITLE
STEEL DETAILS

SHEET NUMBER
S303

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LIGHT GAUGE FRAMING:

1. ALL LIGHT GAUGE FRAMING SHALL BE GALVANIZED MINIMUM 33 KSI STEEL WITH THE FOLLOWING MINIMUM EFFECTIVE PROPERTIES OR APPROVED EQUIVALENT:

   A) TYPICAL 8" EXTERIOR STUD WALL:
   -STUD SPACING: 16" ON CENTER
   -STUD PROPERTIES: 8" 18ga. 1 5/8" FLG. I_x=4.634 IN^4, S_x=1.159 IN^3
   -TRACK AT SLAB: 8" 14ga. 1 1/4" FLG. I_x=5.800 IN^4, S_x=1.425 IN^3
   -TOP TRACK: 8" 14ga. DIETRICH SLP - TRK OR EQUIVALENT
   - BLOCKING (4' SPACING): 8" 18ga. 1 1/4" FLG. I_x=3.689 IN^4, S_x=0.912 IN^3

   B) TYPICAL 3 5/8" INTERIOR LOAD BEARING WALL:
   -STUD SPACING: 16" ON CENTER
   -STUD PROPERTIES: 3 5/8" 18ga, 1 5/8" FLG. I_x=0.710 IN^4, S_x=0.392 IN^3
   -TRACK AT SLAB: 3 5/8" 18ga. 1 1/4" FLG. I_x=0.546 IN^4, S_x=0.294 IN^3
   -TOP TRACK: 3 5/8" 18ga. 1 1/4" FLG. I_x=0.546 IN^4, S_x=0.294 IN^3
   - BLOCKING (4' SPACING): 3 5/8" 18ga. 1 1/4" FLG. I_x=0.546 IN^4, S_x=0.294 IN^3

   C) TYPICAL 6" INTERIOR LOAD BEARING WALL:
   - STUD SPACING: 16" ON CENTER
   - STUD PROPERTIES: 6" 18 ga. 1 5/8" FLG. Ix=2.316 IN^4, Sx=0.772 IN^3
   - TRACK AT SLAB: 6" 18 ga. 1 1/4" FLG. Ix=1.808 IN^4 , Sx=0.594 IN^3
   - TOP TRACK: 6" 18 ga. 1 1/4" FLG. Ix=1.808 IN^4 , Sx=0.594 IN^3
   - BLOCKING (4' SPACING): 6" 18ga. 1 1/4" FLG. I_x=1.808 IN^4, S_x = 0.594 IN^3

   D) TYPICAL SLOPED NORTH CEILING JOISTS BETWEEN EXTERIOR WALL AND COL LINE A
   - JOISTS SPACING: 16" ON CENTER
   - JOISTS PROPERTIES: 8" 18 ga. 1 5/8" FLG. I_x=4.634 IN^4, S_x=1.159 IN^3
   - TRACK: 8" 14 ga. 3" FLG. I_x=10.17 IN^4, S_x=2.47 IN^3
   - BLOCKING (4' SPACING): 8" 18ga. 1 1/4" FLG. I_x=3.689 IN^4, S_x=0.912 IN^3

   E) TYPICAL FLAT SOUTH CEILING JOISTS BETWEEN COL. LINE B AND EXTERIOR WALL
   - JOISTS SPACING: 16" ON CENTER
   - JOISTS PROPERTIES: 8" 18 ga. 1 5/8" FLG. I_x=4.634 IN^4, S_x=1.159 IN^3
   - TRACK: 8" 14ga. 1 1/4" FLG. I_x=5.800 IN^4, S_x=1.425 IN^3
   - BLOCKING (4' SPACING): 8" 18ga. 1 1/4" FLG. I_x=3.689 IN^4, S_x=0.912 IN^3

   F) TYPICAL SLOPED WEST CEILING JOISTS BETWEEN COL. LINE 1 AND 2
   - JOISTS SPACING: 16" ON CENTER
   - JOISTS PROPERTIES: 8" 16ga. 3" FLG. I_x=8.796IN^4, S_x=2.199 IN^3
   - TRACK: 8" 14ga. 1 1/4" FLG. I_x=5.800 IN^4, S_x=1.425 IN^3
   - BLOCKING (4' SPACING): 8" 18ga. 1 1/4" FLG. I_x=3.689 IN^4, S_x=0.912 IN^3

   G) TYPICAL FLAT WEST CEILING JOISTS BETWEEN COL. LINE 2 AND EXTERIOR WALL
   - JOISTS SPACING: 16" ON CENTER
   - JOISTS PROPERTIES: 8" 18 ga. 1 5/8" FLG. I_x=4.634 IN^4, S_x=1.159 IN^3
   - TRACK: 8" 14ga. 1 1/4" FLG. I_x=5.800 IN^4, S_x=1.425 IN^3
   - BLOCKING (4' SPACING): 8" 18ga. 1 1/4" FLG. I_x=3.689 IN^4, S_x=0.912 IN^3

   H) TYPICAL CEILING JOISTS INSIDE THE EXTERIOR WALLS
   - JOISTS SPACING: 16" ON CENTER
   - JOISTS PROPERTIES: 8" 18 ga. 1 5/8" FLG. I_x=4.634 IN^4, S_x=1.159 IN^3
   - TRACK: 8" 14ga. 1 1/4" FLG. I_x=5.800 IN^4, S_x=1.425 IN^3
   - BLOCKING (4' SPACING): 8" 18ga. 1 1/4" FLG. I_x=3.689 IN^4, S_x=0.912 IN^3

   I) TYPICAL ANCILLARY FRAMING BETWEEN COLUMN LINE B AND EXTERIOR WALL
   - JOISTS SPACING/L 16" ON CENTER
   - JOISTS PROPERTIES: 3 1/2" 18ga 1 5/8" FLG. I_x=0.655 IN^4, S_x=0.374 IN^3

2. TRACK TO STRUCTURE ATTACHMENTS:
   - TRACK TO CONC OR CMU: (1) HILTI X-U NAILS AT 6" OC STAGGERED. FASTENERS SHOULD NOT BE LOCATED LESS THAN 1/2" FROM EDGE OF CONCRETE.
   - TRACK TO STEEL BEAM USING #12 TEK FASTNERS: (2) #12 TEK FASTENERS W/#5 POINT CUTTING HEAD @ 12" OC MAX.
   - TRACK TO STEEL BEAM USING POWDER ACTUATED FASTENERS: (2) HILTI X-ENP FASTENERS @ 12" OC MAX
   - TRACK TO METAL FRAMING: (2)#12 SCREWS @12" OC MAX IN THE LONGITUDINAL DIRECTION AND TRACK DEPTH - 1" FOR LATERAL DIRETION OF THE TRACK.

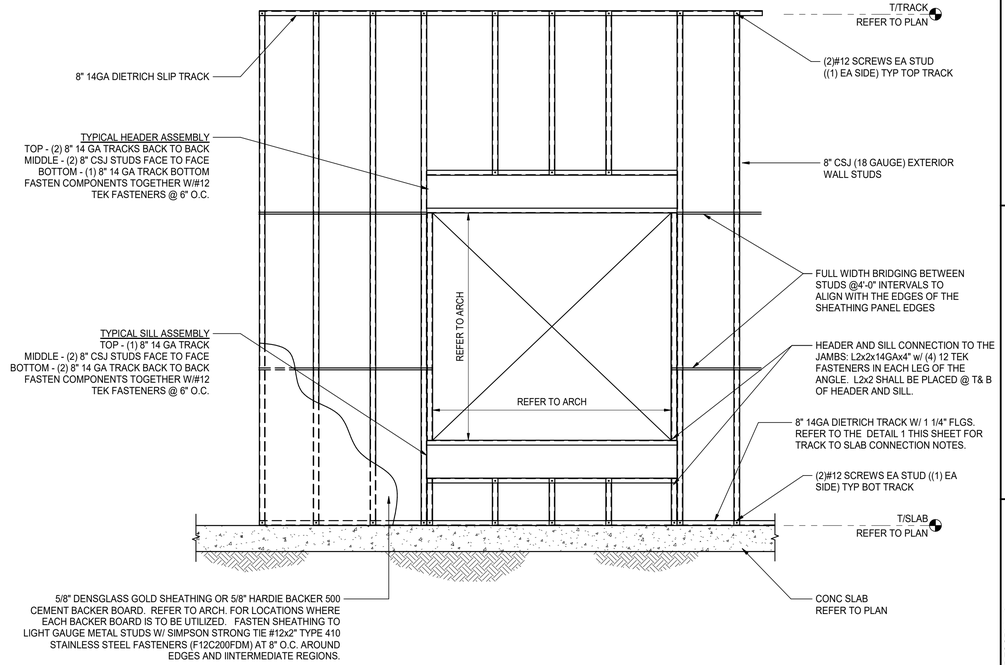
3. FASTEN ALL STUDS TO TOP AND BOTTOM TRACK WITH A MINIMUM OF (2)#12 SCREWS ((1) EACH SIDE) TYPICAL UNLESS OTHERWISE NOTED. PLACE SCREWS TO TOP TRACK IN SLOTTED HOLES PROVIDED.

4. ALL LIGHT GAUGE FRAMING EXPOSED TO EXTERIOR ENVIRONMENTAL CONDTIONS SHALL HAVE A G90 COATING. ALL LIGHT GAUGE FRAMING WITHIN THE EXTERIOR VENEER AND ENVELOPE OF THE BUILDING SHALL HAVE A G60 COATING.

5. PLACE BLOCKING BEHIND ALL SHEATHING JOINTS IN WALL AND JOIST FRAMING.

6. ALL SCREWS SHALL BE #12 TEK FASTENERS OR EQUIVALENT, REFER TO PLANS AND DETAILS FOR FASTENER SIZE.

1 S304 TYPICAL LIGHT GAUGE METAL STUD NOTES
NO SCALE



4 S304 TYPICAL EXTERIOR WALL FRAMING (1) STORY
3/4" = 1'-0"

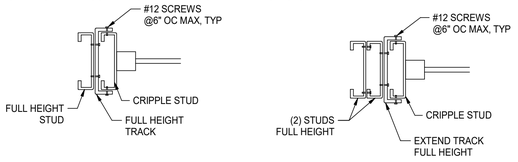
SCALE: 3/4" = 1'-0"

EXTERIOR LIGHT GAUGE JAMB SCHEDULE

OPENING WIDTH	JAMB TYPE	TRACK	STUD	NOTES
OPENING ≤ 4'-0"	I	8" TRACK	(2) 8" STUD	
OPENING ≤ 8'-0"	II	8" TRACK	(3) 8" STUD	

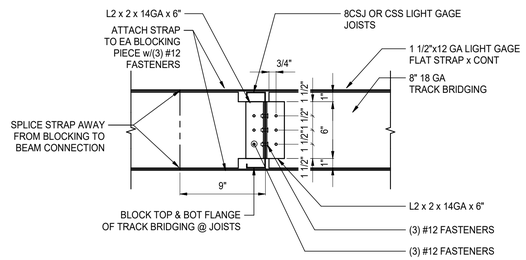
NOTES:

1. S1.4 INDICATES C8 CHANNELS FOR JAMBS ADJACENT TO LARGER STORE FRONT OPENINGS.
2. THE JAMBS INDICATED IN THIS TABLE ARE FOR NON-STORE FRONT OPENINGS AND OPENINGS LESS THAN OR EQUAL TO 8'-0".
3. WINDOW AND DOOR ATTACHMENTS DESIGNED BY MANUFACTURER.



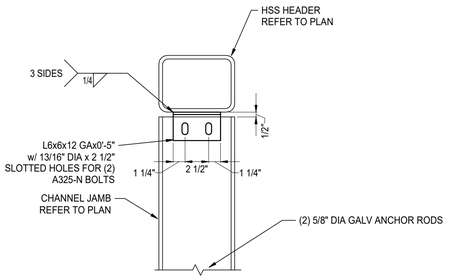
2 S304 LIGHT GUAGE JAMB SCHEDULE
3/4" = 1'-0"

SCALE: 3/4" = 1'-0"

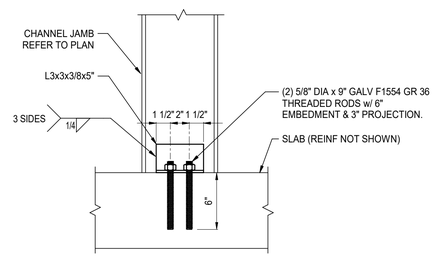


3 S304 LIGHT GAGE BLOCKING DETAIL
1 1/2" = 1'-0"

SCALE: 1 1/2" = 1'-0"



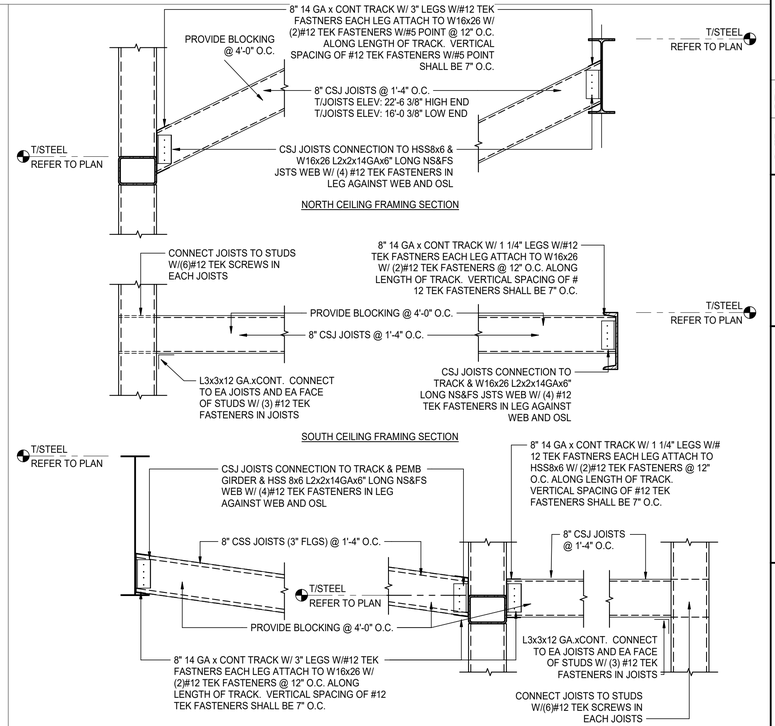
CONNECTION AT HEADER



CONNECTION AT SLAB

5 S304 CURTAIN WALL JAMB
1 1/2" = 1'-0"

SCALE: 1 1/2" = 1'-0"



6 S304 TYPICAL LIGHT GAUGE STICK FRAMING CONNECTIONS DETAIL
3/4" = 1'-0"

SCALE: 1 1/2" = 1'-0"

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MOTT MACDONALD

AFRICATOWN WELCOME CENTER
CITY OF MOBILE
1959 BAY BRIDGE CUTOFF ROAD
MOBILE, ALABAMA 36610

REVISIONS DESCRIPTION
30% Submission
90% Submission
100% Submission

REV	DATE
A	07/17/2023
B	10/01/2023
C	10/27/2023

DATE: OCTOBER 27, 2023
DESIGNED BY: MJT
DRAWN BY: MJT
CHECKED BY: CEL
PROFESSION: STRUCTURAL
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED PROFESSIONAL ENGINEER CHAD EDWARD LYNER
No. 28305
PROFESSIONAL
10-30-2023

SHEET TITLE
STEEL DETAILS

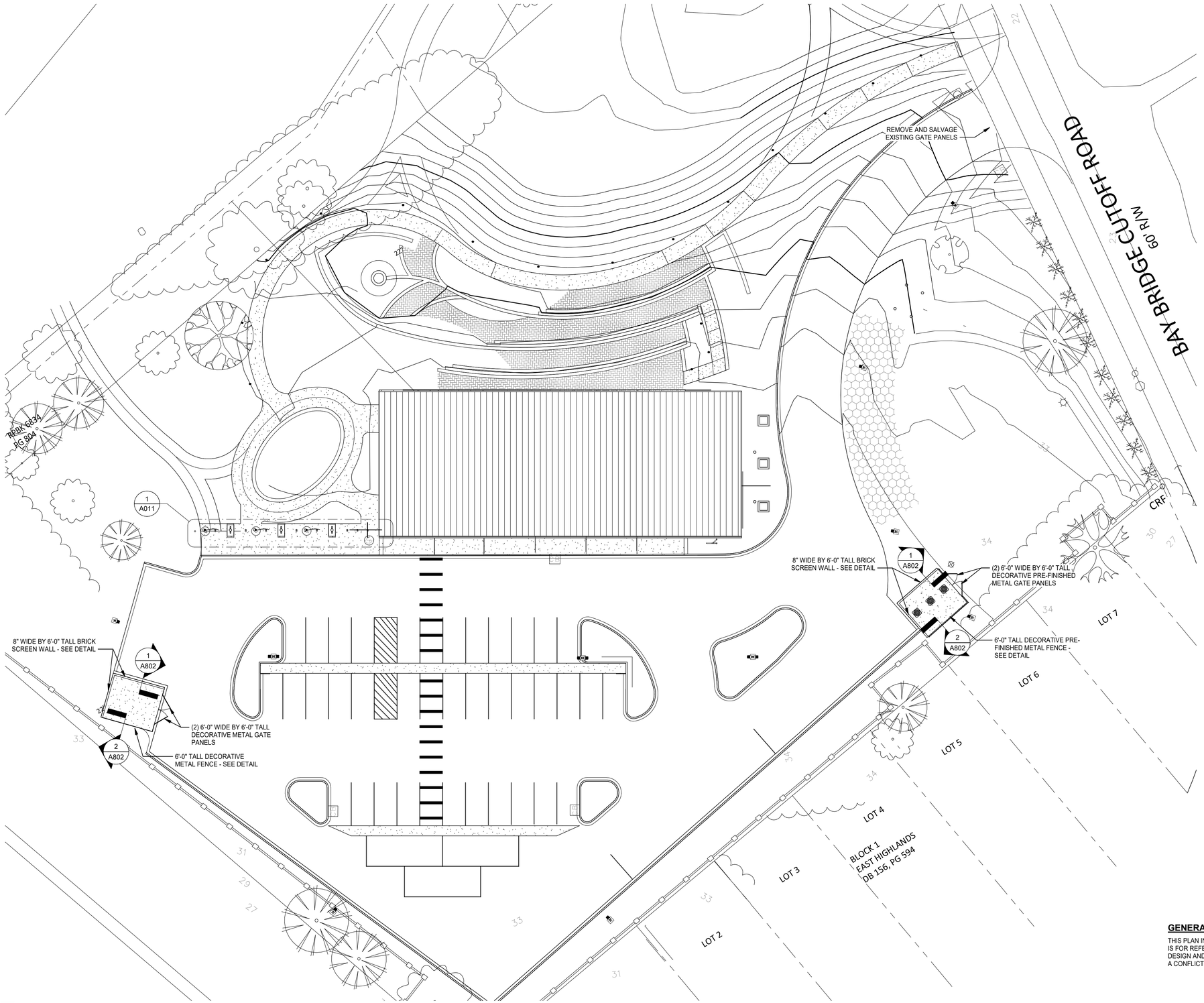
SHEET NUMBER
S304

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GENERAL NOTE:

THIS PLAN INDICATES GENERAL CONFIGURATION AND LAYOUT OF SITE FEATURES AND IS FOR REFERENCE PURPOSES ONLY. REFER TO CIVIL DRAWINGS FOR ACTUAL SITE DESIGN AND DETAILS. NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES THAT IS A CONFLICT OR AFFECTS FINAL SITE FEATURE INSTALLATION.

TRUE NORTH | PROJECT NORTH

ARCHITECTURAL SITE PLAN

SCALE: 1" = 20'-0"

20' 10' 0' 20' 40'

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AFRICATOWN WELCOME CENTER

City of Mobile

1959 Bay Bridge Road Cutoff
Mobile, AL. 36610

REV	DATE	REVISIONS DESCRIPTION
A	07/17/2023	30% Submission
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C	10/27/2023	100% Submission
D	12/7/2023	100% Review Comments

DATE: 10/27/2023
DESIGNED BY: A. Marasca
DRAWN BY: QG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE

ARCH SITE PLAN - REFERENCE

SHEET NUMBER.

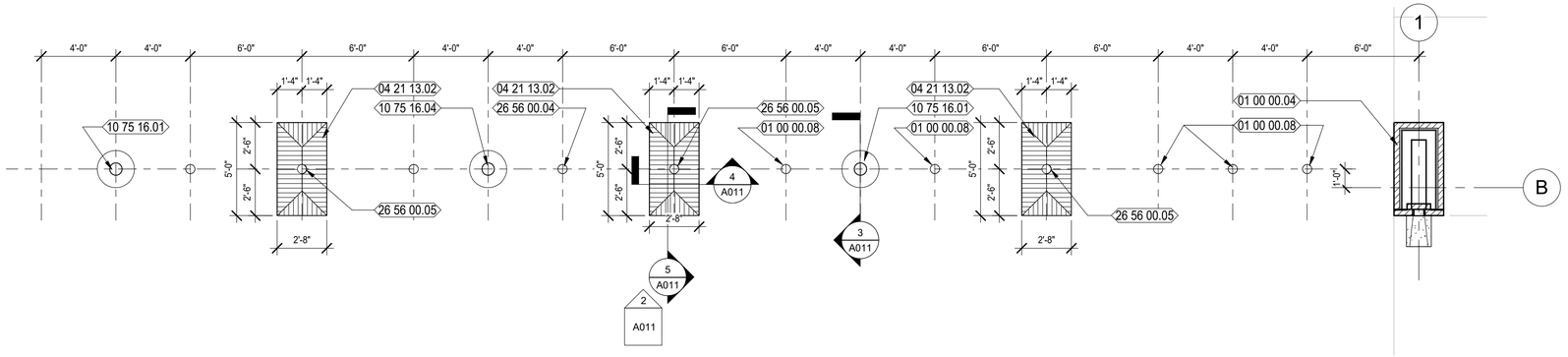
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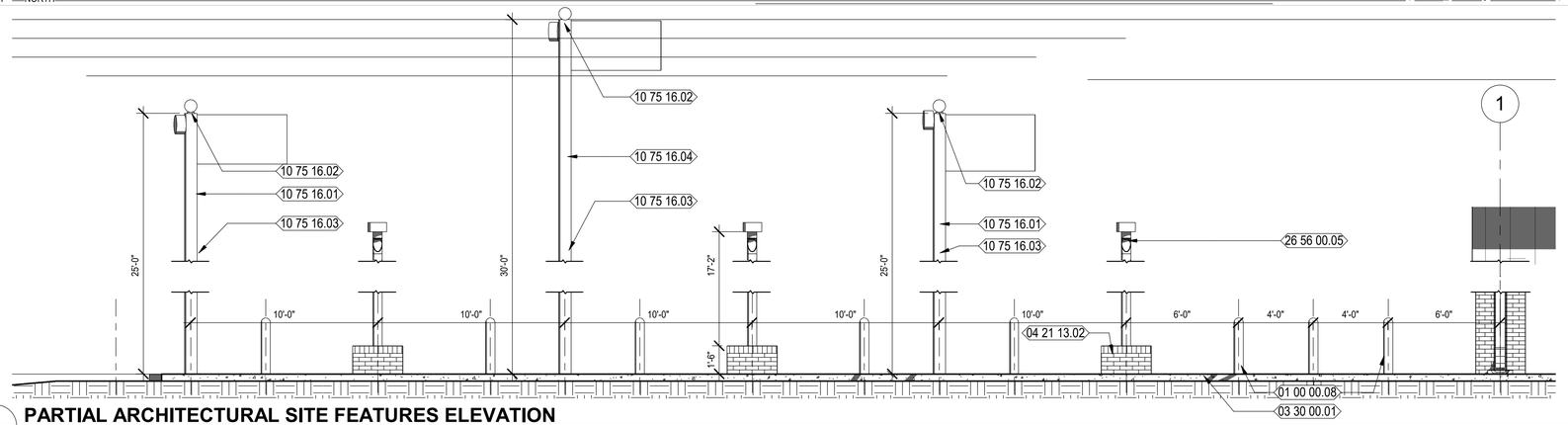
1 A011 ENLARGED PARTIAL ARCHITECTURAL SITE FEATURES PLAN

Scale: 1/4" = 1'-0"

TRUE NORTH

PROJECT NORTH

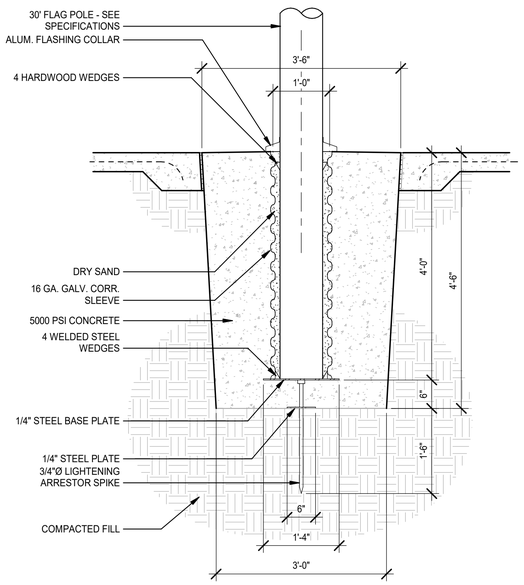
4' 2' 0' 4' 8'



2 A011 PARTIAL ARCHITECTURAL SITE FEATURES ELEVATION

Scale: 1/4" = 1'-0"

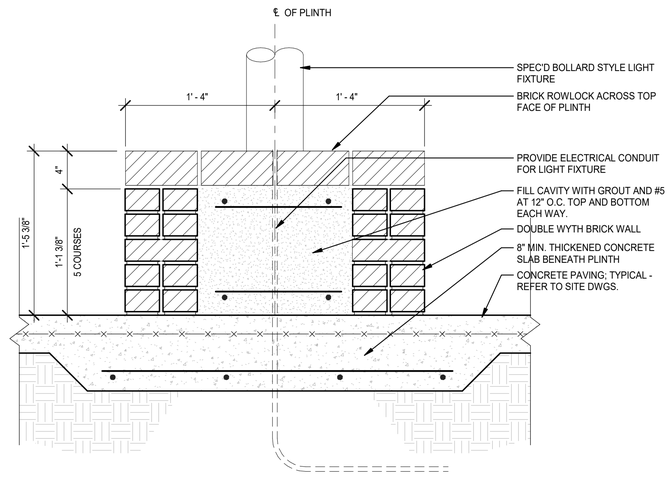
4' 2' 0' 4' 8'



3 A011 SECTION AT FLAG POLE

Scale: 3/4" = 1'-0"

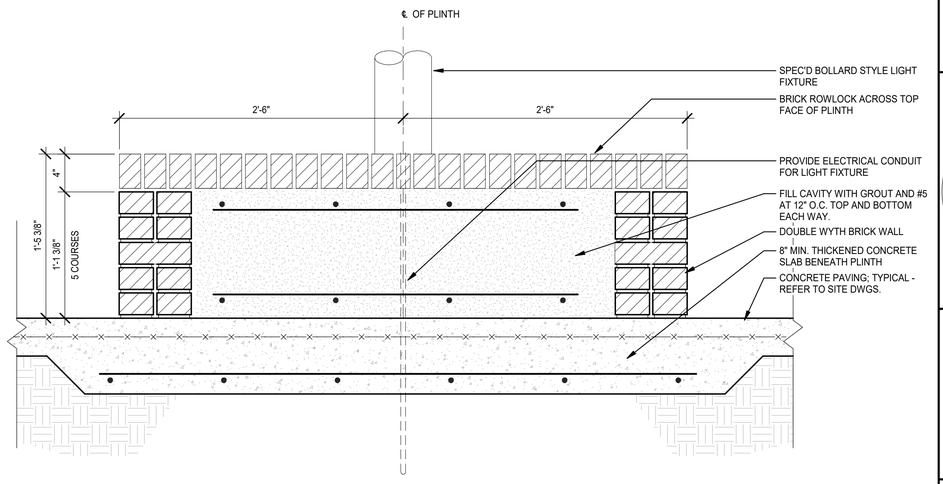
1' 6" 0' 1' 2'



4 A011 TYPICAL PLINTH CROSS SECTION

Scale: 1 1/2" = 1'-0"

1' 6" 0' 1' 2'



5 A011 TYPICAL PLINTH LONG CROSS SECTION

Scale: 1 1/2" = 1'-0"

1' 6" 0' 1' 2'

KEYNOTES

01 00 00.04	BRICK VENEER OVER PEMB RIGID FRAME OF BUILDING.
01 00 00.08	DECORATIVE BOLLARD, TYPICAL
03 30 00.01	CAST-IN-PLACE CONCRETE SLAB OVER VAPOR BARRIER OVER COMPACTED FILL - REFER TO STRUCTURAL DWGS FOR MORE INFORMATION
04 21 13.02	BRICK PLINTH AS DETAILED.
10 75 16.01	SPEC'D 25' HIGH GROUND-SET ALUMINUM FLAGPOLE - SEE DETAIL THIS SHEET.
10 75 16.02	FINIAL AT TOP OF FLAGPOLE.
10 75 16.03	SINGLE HALYARD W/ CLEAT, TYPICAL.
10 75 16.04	SPEC'D 30' HIGH GROUND-SET ALUMINUM FLAGPOLE - SEE DETAIL THIS SHEET.
26 56 00.04	BOLLARD LIGHT FIXTURE - BASIS OF DESIGN IS LUMINIS LN601B.
26 56 00.05	INLINE COLUMN LIGHT FIXTURE - BASIS OF DESIGN IS LUMINIS LN604.

GENERAL NOTES:

1. ALL BRICK, CONCRETE AND CMU TO BE SEALED WITH WATER REPELLENT COATING (MIN. 2 COATS).
2. COORDINATE MANUFACTURER'S SUGGESTED FLAG POLE MOUNTING DETAIL IF THEY DIFFER FROM THOSE INDICATED.
3. REFER TO STRUCTURAL GENERAL NOTES SHEET FOR ADDITIONAL CONCRETE SLAB ON GRADE NOTES.
4. START AND END REINFORCING WITH CLEAR COVER NOT TO EXCEED MINIMUM ALLOWED COVER ON ALL SIDES OF FOOTING. REMAINDER OF REINFORCING SHALL BE PLACED WITHOUT EXCEEDING SPACING.
5. SLAB ON GRADE SHALL BE MINIMUM 4" THICK CONCRETE PLACED ON 10 MIL MINIMUM VAPOR BARRIER ON COMPACTED FILL. REINFORCE SLAB ON GRADE WITH 6x6-W2.0xW2.0 WWF IN FLAT SHEETS. DOUBLE THE WWF FOR 3'-0" MINIMUM AROUND SLAB EDGES. REFER TO TYPICAL DETAILS FOR ADDITIONAL REINFORCEMENT AND REQUIREMENTS. USE CHAIRS TO POSITION REINFORCING 1" BELOW TOP OF SLAB AND TO MAINTAIN THAT DEPTH DURING CONCRETE PLACEMENT.
6. COORDINATE WITH ELECTRICAL FOR CONDUIT AND SERVICE LOCATIONS OF FLAG POLE AND BOLLARD LIGHTING.
7. REFER TO CIVIL DRAWINGS FOR MORE SITE INFORMATION.

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City of Mobile

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REVISIONS		
DESCRIPTION	REV.	DATE
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90% Submission	B	10/02/2023
100% Submission	C	10/27/2023
100% Review Comments	D	12/7/2023

DATE: 10/27/2023
DESIGNED BY: A. Marasca
DRAWN BY: QG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P. MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE

ARCH. SITE ACCENTS

SHEET NUMBER

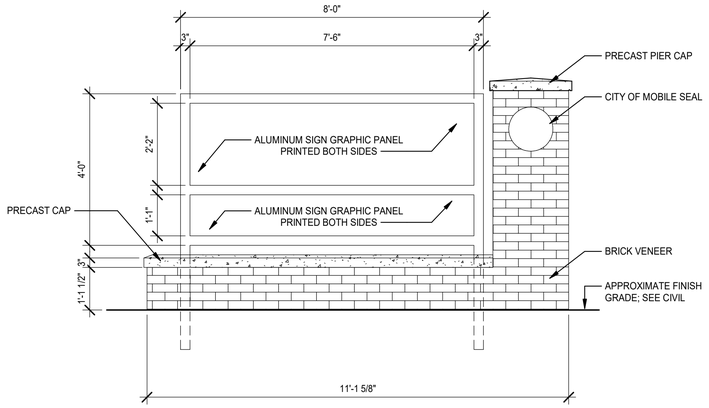
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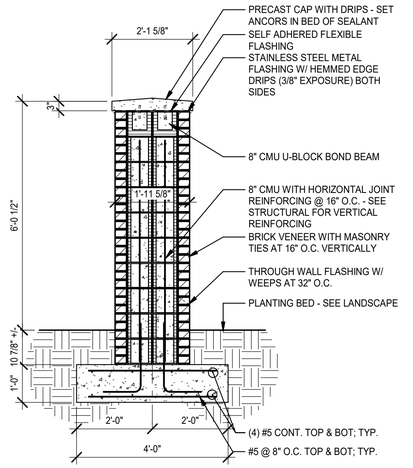
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1 SITE SIGN ELEVATION

A012 **Scale: 1/2" = 1'-0"**

2' 1' 0' 2' 4'

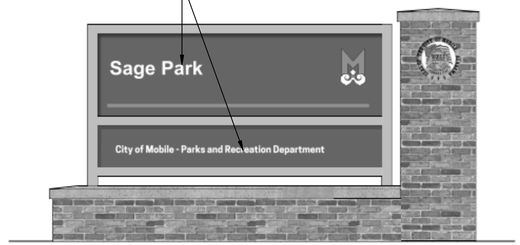


2 SITE SIGN SECTION

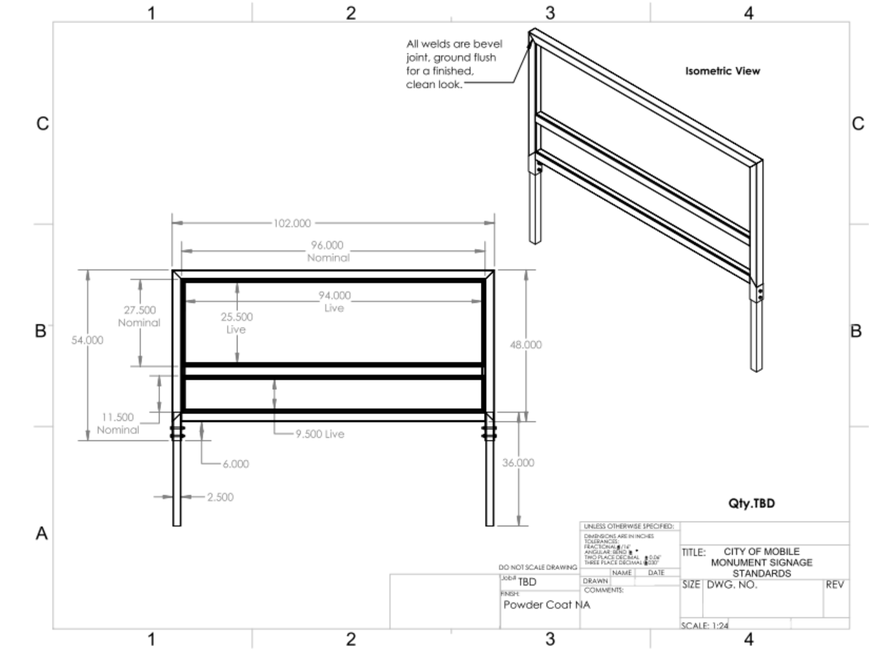
A012 **Scale: 1/2" = 1'-0"**

2' 1' 0' 2' 4'

NOTE:
COORDINATE EXACT VERBIAGE IN SUBMITTAL



RENDERING



3 SITE SIGN FRAME DETAIL

A012 **NOT TO SCALE**

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AFRICATOWN WELCOME CENTER
City of Mobile
1959 Bay Bridge Road Cutoff
Mobile, AL. 36610

REVISIONS DESCRIPTION	DATE	REV.
30% Submission	07/17/2023	A
90% Submission	10/02/2023	B
100% Submission	10/27/2023	C
100% Review Comments	12/7/2023	D

DATE:	10/27/2023
DESIGNED BY:	A. Marasca
DRAWN BY:	QG, AB, JE
CHECKED BY:	C. Echols
PROFESSION:	ARCHITECTURE
PROJECT ARCHITECT:	Andrew Marasca
M.M.A. PROJECT NUMBER:	502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE

ARCH. SITE SIGNAGE DETAILS

SHEET NUMBER

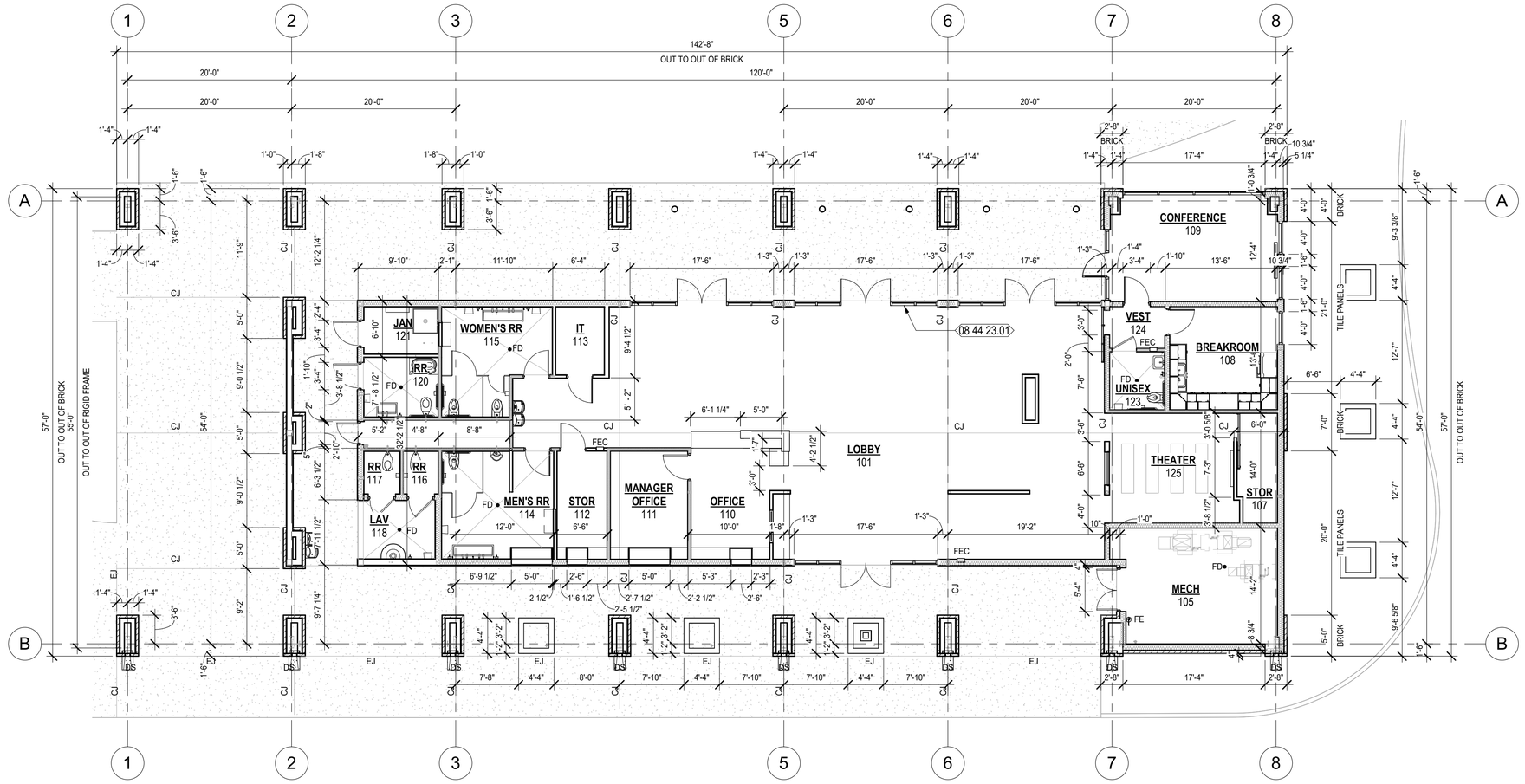
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OVERALL FLOOR PLAN - DIMENSIONED

SCALE: 1/8" = 1'-0"

TRUE NORTH | PROJECT NORTH

8' 4' 0' 8' 16'

KEYNOTES

08 44 23.01	SPECIFIED CURTAIN WALL SYSTEM; GLAZING COLOR: CLEAR BRUSHED ALUMINUM

GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND INFORM THE A/E IF THERE ARE ANY DISCREPANCIES BEFORE PROCEEDING TO DO WORK OR PURCHASE ORDERS.
2. CONTRACTOR SHALL COORDINATE WITH ALL TRADES PRIOR TO COMMENCING WORK.
3. SEE LIFE SAFETY PLAN FOR LOCATIONS AND TYPES OF RATED WALL ASSEMBLIES, FIRE EXTINGUISHERS, AND MEANS OF EGRESS.
4. REFER TO SHEET G103 FOR WALL TYPES INFORMATION.
5. COORDINATE WITH MECHANICAL, PLUMBING, AND ELECTRICAL PRIOR TO COMMENCING ANY WORK.
6. ALL INTERIOR DOORS SHALL BE 4" OFFSET FROM WALL UNLESS OTHERWISE NOTED.
7. ALLOW A MINIMUM OF 18 INCHES LATCH-SIDE CLEARANCE ON THE PULL SIDE OF ALL DOORS WITH MANUAL CLOSERS AND A MINIMUM OF 12 INCHES LATCH-SIDE CLEARANCE ON THE PUSH SIDE OFF ALL DOORS WITH MANUAL CLOSERS
8. GENERAL CONTRACTOR SHALL COORDINATE THE LOCATION OF REQUIRED BLOCKING IN WALLS TO RECEIVE CABINETS, SHELVING, TOILET ACCESSORIES, ETC.
9. ALLOW A MINIMUM OF 1 INCH CLEARANCE FROM THE EDGE OF ALL WALLS AND OUTSIDE FACE OF CASEWORK, TYPICAL.
10. W## INDICATES WINDOW REQUIREMENT. SEE WINDOW SCHEDULES FOR SIZES, GLAZING, ETC. REQUIRED.
11. 101 INDICATES DOOR NUMBER. SEE DOOR SCHEDULE FOR SPECIFIC INFORMATION ON EACH DOOR.
12. SEE FINISH DRAWINGS FOR SPECIFIC FINISH AND SURFACE PREPARATION REQUIREMENTS FOR EACH SPACE.
13. SEE REFLECTED CEILING PLANS FOR SPECIFIC CEILING TYPES, HEIGHTS, DETAILS, LIGHTS, DIFFUSERS, ETC.
14. SEE CASEWORK DRAWINGS FOR SPECIFIC CASEWORK SIZES, FINISHES, AND OTHER REQUIREMENTS.
15. SEE STRUCTURAL DRAWINGS FOR ANY MISCELLANEOUS FRAMING MEMBERS THAT ARE WITH WALL CONSTRUCTION ABOVE CEILINGS. INDICATE BLOCK WALLS, ETC.
16. DETAILS LABELED "TYPICAL DETAILS" ON THE DRAWINGS APPLY TO ALL SITUATIONS THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY DETAILED. SUCH DETAILS APPLY WHETHER OR NOT THEY ARE KEYED IN AT EACH LOCATION.
17. SEE GENERAL NOTES ON LEGENDS AND ABBREVIATIONS SHEET FOR MORE INFORMATION CONCERNING WORK NOT SHOWN ON DRAWINGS.
18. METHOD FOR DIMENSIONING WALLS AND OPENINGS:
    - MASONRY WALLS: FACE TO FACE
    - EXTERIOR FRAME WALLS: FACE OF STUDS
    - INTERIOR FRAME WALLS: FACE OF STUDS

    UNLESS OTHERWISE NOTED.

PLAN LEGEND:

- NEW GALV. METAL STUD WALLS
- NEW INSULATED GALV. METAL STUD WALLS
- NEW CONCRETE MASONRY WALLS
- NEW BRICK VENEER
- NEW DECORATIVE PRECAST CONCRETE UNITS
- NEW ALUMINUM FIXED WINDOW
- NEW DOOR - REFER TO DOOR SCHEDULE
- ▫ DS — DOWNSPOUT LOCATION
- FEC — SEMI-RECESSED FIRE EXTINGUISHER CABINET
- FE — WALL MOUNTED FIRE EXTINGUISHER

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DRAWN BY: OG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE

OVERALL DIMENSION FLOOR PLAN

SHEET NUMBER

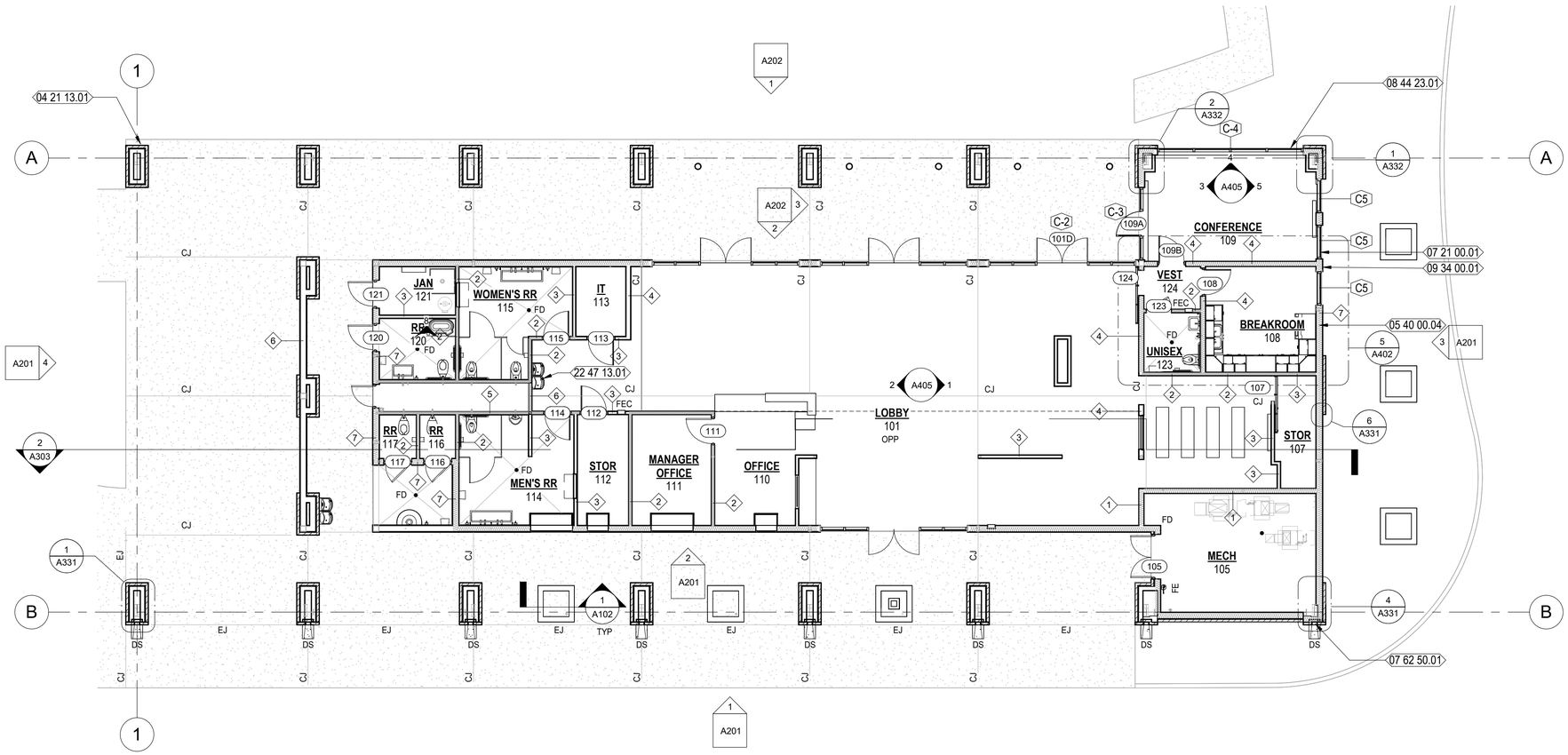
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KEYNOTES

04 21 13.01	4" NOMINAL BRICK VENEER
05 40 00.04	8" GALVANIZED METAL STUDS AT 16" O.C. - REFER TO STRUCT. DWGS. FOR MORE INFORMATION
07 21 00.01	BATT INSULATION AS SHOWN
07 62 50.01	PREFINISHED METAL GUTTERS WITH DOWNSPOUTS
08 44 23.01	SPECIFIED CURTAIN WALL SYSTEM; GLAZING COLOR: CLEAR BRUSHED ALUMINUM
09 34 00.01	SPECIFIED EXTERIOR TILE PANELS - 30"x60".
22 47 13.01	SPECIFIED DRINKING FOUNTAIN WITH BOTTLE FILLER

GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND INFORM THE A/E IF THERE ARE ANY DISCREPANCIES BEFORE PROCEEDING TO DO WORK OR PURCHASE ORDERS.
2. CONTRACTOR SHALL COORDINATE WITH ALL TRADES PRIOR TO COMMENCING WORK.
3. SEE LIFE SAFETY PLAN FOR LOCATIONS AND TYPES OF RATED WALL ASSEMBLIES, FIRE EXTINGUISHERS, AND MEANS OF EGRESS.
4. REFER TO SHEET G103 FOR WALL TYPES INFORMATION.
5. COORDINATE WITH MECHANICAL, PLUMBING, AND ELECTRICAL PRIOR TO COMMENCING ANY WORK.
6. ALL INTERIOR DOORS SHALL BE 4" OFFSET FROM WALL UNLESS OTHERWISE NOTED.
7. ALLOW A MINIMUM OF 18 INCHES LATCH-SIDE CLEARANCE ON THE PULL SIDE OF ALL DOORS WITH MANUAL CLOSERS AND A MINIMUM OF 12 INCHES LATCH-SIDE CLEARANCE ON THE PUSH SIDE OFF ALL DOORS WITH MANUAL CLOSERS
8. GENERAL CONTRACTOR SHALL COORDINATE THE LOCATION OF REQUIRED BLOCKING IN WALLS TO RECEIVE CABINETS, SHELVING, TOILET ACCESSORIES, ETC.
9. ALLOW A MINIMUM OF 1 INCH CLEARANCE FROM THE EDGE OF ALL WALLS AND OUTSIDE FACE OF CASEWORK, TYPICAL.
10. W## INDICATES WINDOW REQUIREMENT. SEE WINDOW SCHEDULES FOR SIZES, GLAZING, ETC. REQUIRED.
11. 101 INDICATES DOOR NUMBER. SEE DOOR SCHEDULE FOR SPECIFIC INFORMATION ON EACH DOOR.
12. SEE FINISH DRAWINGS FOR SPECIFIC FINISH AND SURFACE PREPARATION REQUIREMENTS FOR EACH SPACE.
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14. SEE CASEWORK DRAWINGS FOR SPECIFIC CASEWORK SIZES, FINISHES, AND OTHER REQUIREMENTS.
15. SEE STRUCTURAL DRAWINGS FOR ANY MISCELLANEOUS FRAMING MEMBERS THAT ARE WITH WALL CONSTRUCTION ABOVE CEILINGS. INDICATE BLOCK WALLS, ETC.
16. DETAILS LABELED "TYPICAL DETAILS" ON THE DRAWINGS APPLY TO ALL SITUATIONS THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY DETAILED. SUCH DETAILS APPLY WHETHER OR NOT THEY ARE KEYED IN AT EACH LOCATION.
17. SEE GENERAL NOTES ON LEGENDS AND ABBREVIATIONS SHEET FOR MORE INFORMATION CONCERNING WORK NOT SHOWN ON DRAWINGS.
18. METHOD FOR DIMENSIONING WALLS AND OPENINGS:
    - MASONRY WALLS: FACE TO FACE
    - EXTERIOR FRAME WALLS: FACE OF STUDS
    - INTERIOR FRAME WALLS: FACE OF STUDS

    UNLESS OTHERWISE NOTED.

PLAN LEGEND:

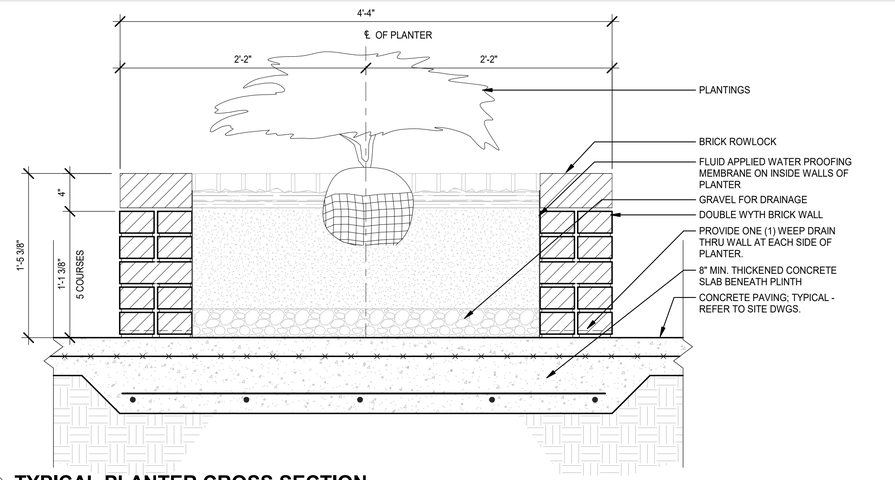
- NEW GALV. METAL STUD WALLS
- NEW INSULATED GALV. METAL STUD WALLS
- NEW CONCRETE MASONRY WALLS
- NEW BRICK VENEER
- NEW DECORATIVE PRECAST CONCRETE UNITS
- NEW ALUMINUM FIXED WINDOW
- NEW DOOR - REFER TO DOOR SCHEDULE
- DS — DOWNSPOUT LOCATION
- FEC — SEMI-RECESSED FIRE EXTINGUISHER CABINET
- FE — WALL MOUNTED FIRE EXTINGUISHER

OVERALL FLOOR PLAN - REFERENCE

TRUE NORTH / PROJECT NORTH

SCALE: 1/8" = 1'-0"

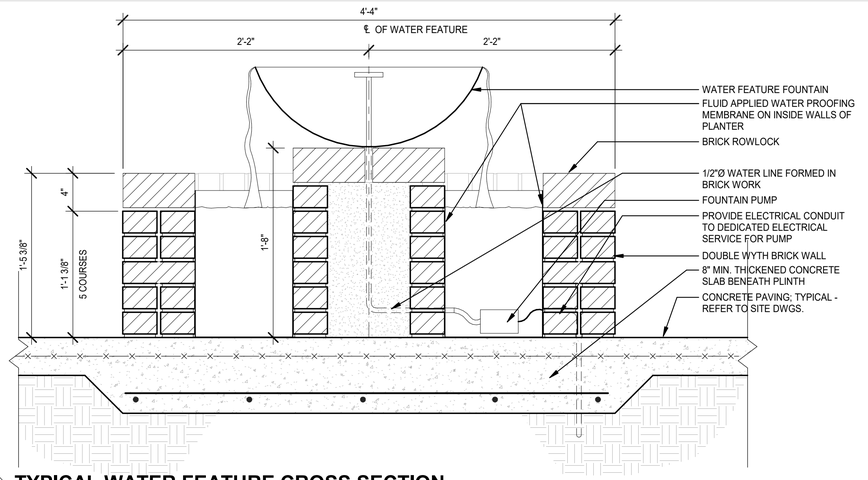
8' 4' 0' 8' 16'



1 A102 TYPICAL PLANTER CROSS SECTION

Scale: 1 1/2" = 1'-0"

6" 3" 0' 6" 1'



2 A102 TYPICAL WATER FEATURE CROSS SECTION

Scale: 1 1/2" = 1'-0"

6" 3" 0' 6" 1'

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REV	DATE	REVISIONS DESCRIPTION
A	07/17/2023	30% Submission
B	10/02/2023	90% Submission
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D	12/7/2023	100% Review Comments

DATE: 10/27/2023
DESIGNED BY: A. Marasca
DRAWN BY: OG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE
OVERALL REFERENCE FLOOR PLAN

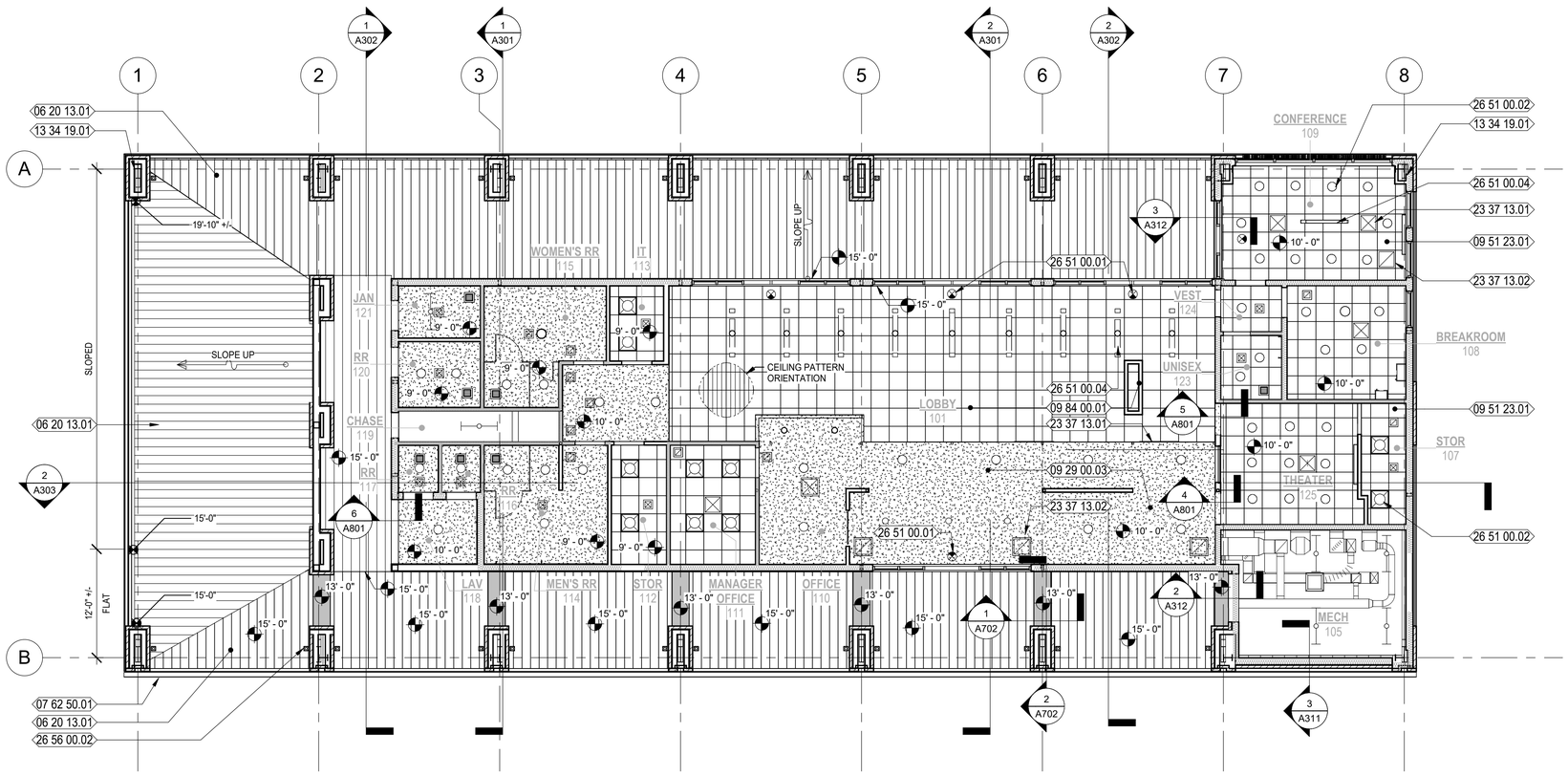
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TRUE NORTH PROJECT NORTH

REFLECTED CEILING PLAN

SCALE: 1/8" = 1'-0"

8' 4' 0' 8' 16'

NOTE:

THIS PLAN INDICATES GENERAL CONFIGURATION AND LAYOUT OF MECHANICAL DIFFUSERS AND LIGHT FIXTURES. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR FIXTURE AND EQUIPMENT QUANTITIES. NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES THAT IS A CONFLICT OR AFFECTS THE FINAL INSTALLATION.

KEYNOTES

06 20 13.01	3/4" THICK CYPRESS BOARD CEILING OVER 5/8" PLYWOOD SHEATHING W/ LIQUID APPLIED VAPOR BARRIER BETWEEN PLYWOOD AND CYPRESS - CYPRESS TO BE STAINED AND SEALED FOR EXTERIOR USE. 40% NOMINAL 4" WIDE AND 60% NOMINAL 6" WIDE BOARDS SPACED 3/8" APART, TYPICAL.
07 62 50.01	PREFINISHED METAL GUTTERS WITH DOWNSPOUTS
09 29 00.03	5/8" GYPSUM BOARD CEILING WITH SCHEDULED FINISH
09 51 23.01	SUSPENDED ACOUSTICAL TILE AND GRID WITH #9 HANGER WIRE 48" OC 3 TWIST MIN., SEE FINISH SCHEDULE AND REFLECTED CEILING PLAN
09 84 00.01	CEMENTITIOUS WOOD FIBER ACOUSTICAL CEILING SYSTEM - BASIS OF DESIGN TECTUM DESIGNART BY ARMSTRONG.
13 34 19.01	PRE-ENGINEERED METAL BUILDING RIGID FRAME.
23 37 13.01	HVAC SUPPLY DIFFUSERS - REFER TO MECH. DWGS.
23 37 13.02	HVAC RETURN AIR GRILLES - REFER TO MECH. DWGS.
26 51 00.01	ILLUMINATED EXIT SIGN; SEE ELECTRICAL DWGS.
26 51 00.02	SPEC'D LED LIGHT FIXTURE; SEE ELECTRICAL DWGS.
26 51 00.04	SPEC'D DECORATIVE SUSPENDED LED LIGHT FIXTURE; SEE ELECTRICAL DWGS.
26 56 00.02	SPEC'D WALL MOUNTED EXTERIOR LIGHTING FIXTURE; SEE ELECTRICAL

REFELECTED CEILING PLAN LEGEND:

- 2'x2' SUSPENDED CEILING GRID & ACOUSTICAL CEILING TILES
- PAINTED GYPSUM BOARD CEILING ON METAL SUSPENSION SYSTEM
- 3/4" THICK CYPRESS - STAINED AND SEALED OVER LIQUID APPLIED VAPOR BARRIER OVER 5/8" PLYWOOD SHEATHING
- 30x60 TILE PANELS OVER CEMENTITIOUS BACKER BOARD
- OPEN TO ABOVE
- 2x2 LED RECESSED LIGHT FIXTURE
- DECORATIIVE SUSPENDED LED LIGHT FIXTURE
- DECORATIIVE SUSPENDED LED LIGHT FIXTURE
- RECESSED CAN LIGHT FIXTURE
- ILLUMINATED / DIRECTIONAL EXIT SIGN
- 4' SURFACE MOUNTED LED LIGHT FIXTURE
- EXTERIOR RATED WALL MOUNTED LED SCONCE
- HVAC SUPPLY DIFFUSER
- HVAC RETURN GRILLE
- EXHAUST FAN
- HEADER AT DOOR, WINDOW OR CASED OPENING

GENERAL REF. CEILING PLAN NOTES:

1. THE REFLECTED CEILING PLAN IS PROVIDED TO ILLUSTRATE ARCHITECTURAL ITEMS AND TO PROVIDE A POINT OF REFERENCE FOR PLACEMENT OF MECHANICAL AND ELECTRICAL ITEMS PENETRATING THE CEILING.
2. GENERAL CONTRACTOR SHALL REFER TO MECHANICAL & ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR SCOPE OF WORK. OMMISSION OF SAME ON THIS REFLECTED CEILING PLAN DOES NOT RELIEVE THE CONTRACTOR OF ANY OBLIGATION FROM PROVISIONS SHOWN ON MECHANICAL AND ELECTRICAL PORTIONS OF THE DOCUMENTS.
3. GENERAL CONTRACTOR AND HIS MECHANICAL SUBCONTRACTOR(s) SHALL RECOGNIZE AS A REQUIREMENT OF THIS PROJECT CAREFUL COORDINATION OF DUCTWORK, SPRINKLER PIPING, LIGHT FIXTURES AND FURRING AT STRUCTURE. NO FABRICATION OF DUCTWORK SHALL BEGIN UNTIL THE GENERAL CONTRACTOR HAS VERIFIED THAT ALL CEILING HEIGHTS SHOWN HEREON WILL INDEED ALLOW PROPER CLEARANCE.
4. CROSS RUNNERS AND ALL MAIN RUNNERS NOT CONNECTED TO WALLS MUST BE INTERCONNECTED NEAR THE FREE END WITH A METAL STRUT SECURELY ATTACHED TO PREVENT SPREADING.
5. HANGER WIRES SHALL BE PROVIDED FOR ALL MAIN RUNNERS AND CROSS RUNNERS WITHIN 8" OF CEILING PERIMETERS.
6. HANGER WIRES THAT ARE MORE THAN 1 IN 6 OUT OF PLUMB SHALL HAVE COUNTERBRACED WIRES.
7. CEILING GRID MAY BE ATTACHED TO 2 ADJACENT WALLS; THE CEILING MUST BE AT LEAST 1/2 INCH FREE OF OTHER WALLS. IF WALLS RUN DIAGONALLY TO CEILING GRID SYSTEM RUNNERS, ONE END OF MAIN AND CROSS RUNNERS SHALL BE FREE AND A MINIMUM OF 1/2 INCH CLEAR OF WALL.
8. A SET OF FOUR (4), 12 GA. SPLAY WIRES SHALL BE PROVIDED AT A SPACING NOT MORE THAN 12 FT. BY 12 FT. O.C. FIRST SET OF SPLAY WIRES SHALL BE LOCATED NOT MORE THAN ONE HALF THE ABOVE DISTANCES FROM THE PERIMETER WALLS. WIRES SHALL BE TAUT WITHOUT CEILING LIFT. THE SLOPE OF THESE WIRES SHOULD NOT EXCEED 45 FROM THE PLANE OF THE CEILING. SPLICE WIRES WILL NOT BE PERMITTED UNLESS PREVIOUSLY APPROVED.
9. ALL CEILING WIRES AND UNBRACED DUCTS, PIPES, ETC. MUST BE SEPERATED.
10. ALL CEILING CONDUIT AND UNBRACED DUCTS, PIPES, ETC. MUST BE SEPERATED.
11. ALL LIGHT FIXTURES SHALL BE POSITIVELY ATTACHED TO THE CEILING STRUCTURE TO RESIST A HORIZONTAL FORCE EQUAL TO THE WEIGHT OF THE FIXTURES.
12. FLUSH OR RECESSED LIGHT FIXTURES AND AIR TERMINALS OR SERVICES WEIGHING LESS THAN 56 POUNDS MAY BE SUPPORTED ON HEAVY DUTY GRID BUT MUST HAVE 2 #12 GA SLACK SAFETY WIRES FROM DIAGONAL CORNERS TO THE STRUCTURE ABOVE.
13. FLUSH OR RECESSED LIGHT FIXTURES AND AIR TERMINALS OR SERVICES WEIGHING MORE THAN 56 POUNDS MUST BE INDEPENDENTLY SUPPORTED BY NOT LESS THAN 4 TAUT #12 GA WIRES CAPABLE OF SUPPORTING 4 TIMES THE LOAD.
14. PROVIDE TRAPEZE OR OTHER SUPPLEMENTARY SUPPORT MEMBERS AT OBSTRUCTIONS TO MAIN HANGER SPACING. PROVIDE ADDITIONAL HANGERS, STRUTS OR BRACES AS REQUIRED AT CEILING BREAKS, SOFFITS OR DISCONTINUOUS AREAS.
15. SURFACE MOUNTED LIGHT FIXTURES SHALL BE SUPPORTED BY AT LEAST TWO (2) POSITIVE DEVICES WHICH SURROUND THE CEILING RUNNER AND ARE SUPPORTED TO THE STRUCTURE ABOVE WITH #12 GA WIRE. ROTATIONAL SPRING CLIPS ARE NOT ACCEPTABLE.
16. PENDANT MOUNTED FIXTURES SHALL BE SUPPORTED DIRECTLY TO THE STRUCTURE ABOVE WITH HANGER WIRES THROUGH EACH PENDANT CAPABLE OF SUPPORTING 4 TIMES THE LOAD.
17. HANGER WIRES MUST BE FASTENED WITH NOT LESS THAN 3 TIGHT TURNS. SPLAY WIRES MUST HAVE 4 TIGHT TURNS FOR A #12 GA. MAKE ALL TURNS TIGHT WITHIN 1 1/2".
18. PROVIDE FLUSH ACCESS PANELS IN GYP. BOARD CEILINGS AS REQUIRED. PAINT TO MATCH CEILING. COORDINATE LOCATIONS & SIZES WITH MECH., PLUMB., AND ELEC. REQUIREMENTS.

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PROJECT ARCHITECT: Andrew Marasca
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STATE OF ALABAMA
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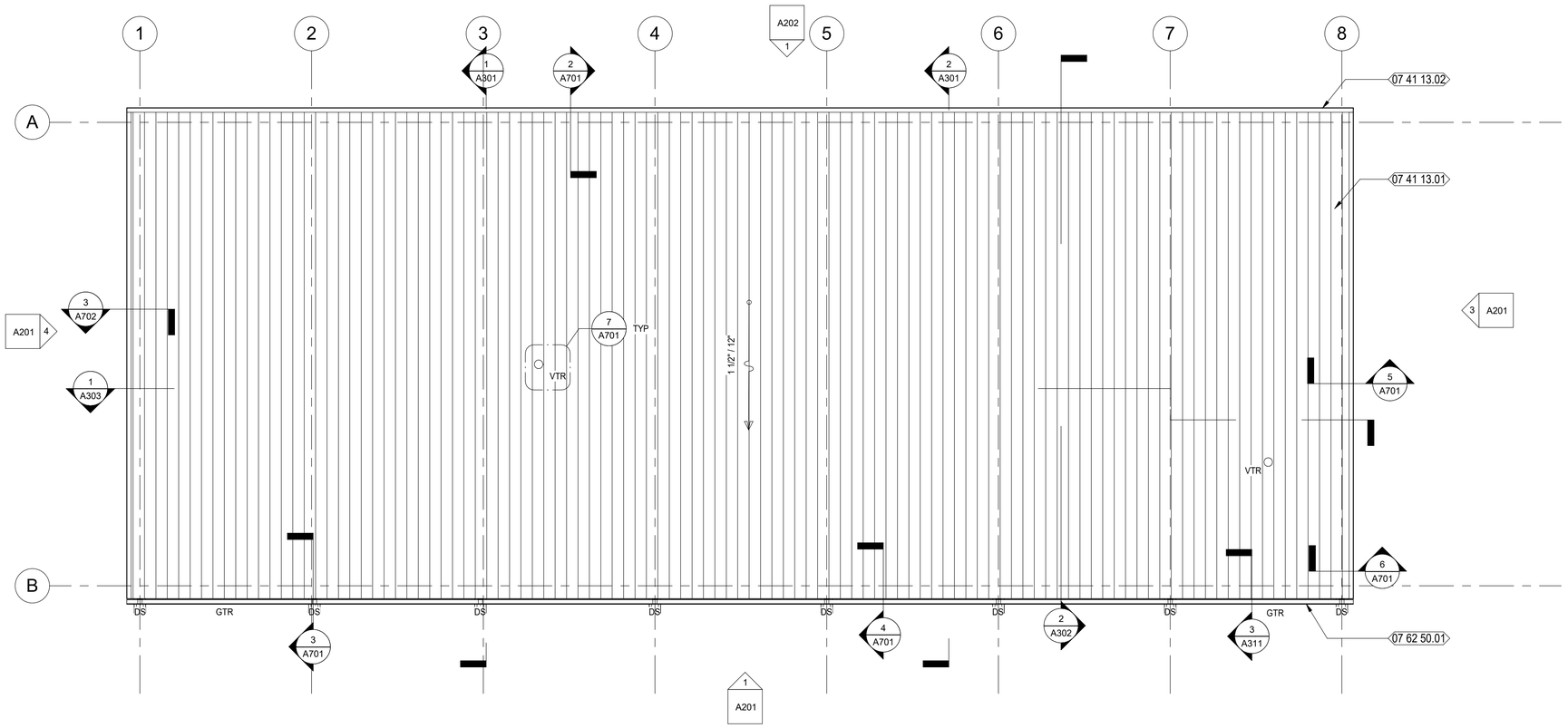
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ROOF PLAN

SCALE: 1/8" = 1'-0"

TRUE NORTH

PROJECT NORTH

8' 4' 0' 8' 16'

KEYNOTES

07 41 13.01	SPEC'D PRE-FINISHED STRUCTURAL STANDING SEAM METAL ROOF SYSTEM.
07 41 13.02	PRE-FINISHED SHED RIDGE FLASHING
07 62 50.01	PREFINISHED METAL GUTTERS WITH DOWNSPOUTS

GENERAL NOTES: ROOF PLAN

1. CONTRACTOR SHALL FOLLOW SMACNA STANDARDS FOR ALL ROOF TOP PENETRATIONS.
2. REFER TO PLUMBING DRAWINGS FOR PLUMBING VENTS AND PIPES THROUGH ROOF WHICH MAY NOT BE SHOWN ON THIS ROOF PLAN.
3. REFER TO MECHANICAL DRAWINGS FOR OPENINGS, DUCTS AND VENTS THROUGH ROOF WHICH MAY NOT BE SHOWN ON THIS ROOF PLAN.
4. REFER TO SPECIFICATIONS FOR MINIMUM ACCEPTABLE NRCA STANDARD FLASHING DETAILS OF HIP, VALLEY, RIDGE, EXPANSION JOINT, ROOF PENETRATION AND ROOF TO WALL TRANSITION, ETC.
5. ALL FASTENERS AND FLASHING COMPONENTS SHALL MATCH ADJACENT ROOF PANEL COLORS.
6. ALL GUTTER AND DOWNSPOUTS SHALL BE PRE-FINISHES STEEL, UNLESS OTHERWISE NOTED.
   - GUTTER (6"W X 6"D)
   - DOWNSPOUT (4" X 4")
7. FIXED POINT AT STANDING SEAM METAL ROOF SYSTEM: EAVES AND VALLEY UNLESS OTHERWISE NOTED.

LEGEND:

	PREFINISHED STANDING SEAM METAL ROOF
	EXHAUST VENT
DS	PREFINISHED METAL DOWNSPOUT
VTR	VENT THROUGH ROOF; REFER TO PLUMBING
GTR	GUTTER

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DRAWN BY:	QG, AB, JE
CHECKED BY:	C. Echols
PROFESSION:	ARCHITECTURE
PROJECT ARCHITECT:	Andrew Marasca
M.M.A. PROJECT NUMBER:	502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE

OVERALL ROOF PLAN

SHEET NUMBER

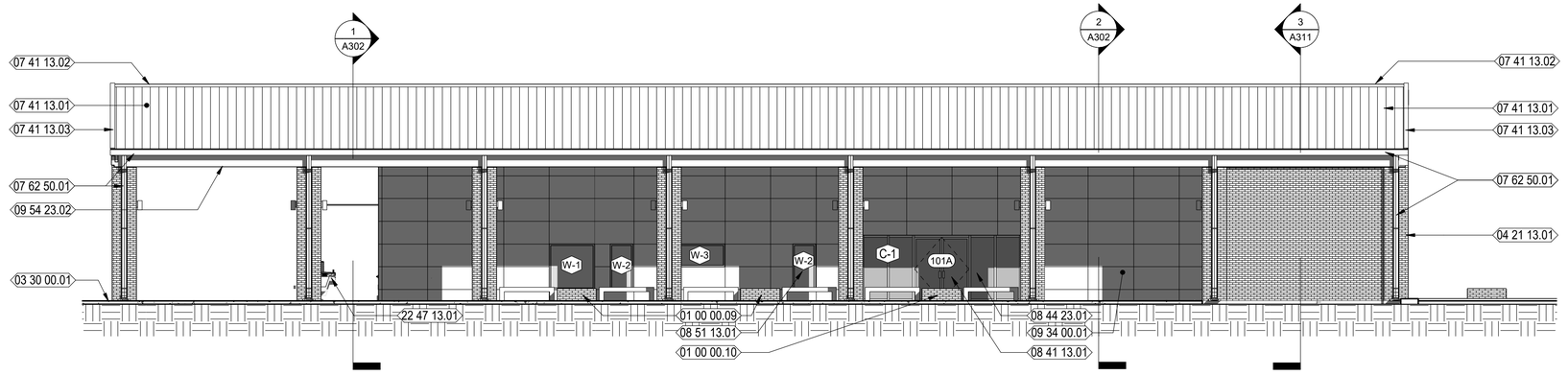
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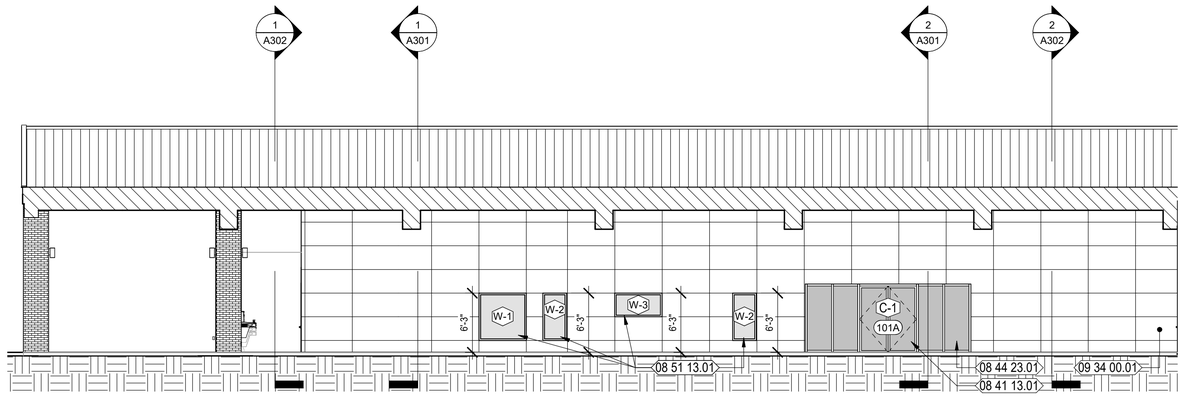
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SOUTH ELEVATION

1 / A201 — Scale: 1/8" = 1'-0"

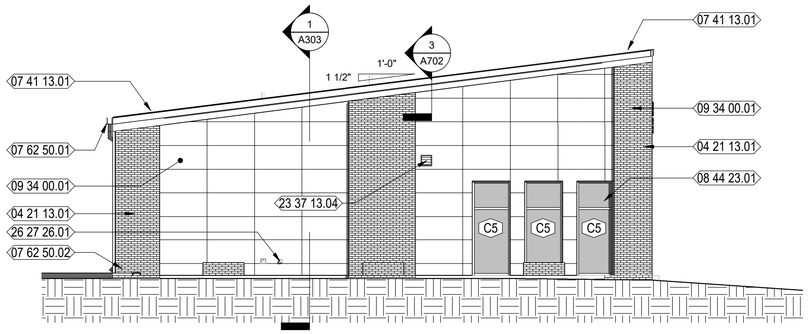
8' 4' 0' 8' 16'



SOUTH ELEVATION NO COLUMNS

2 / A201 — Scale: 1/8" = 1'-0"

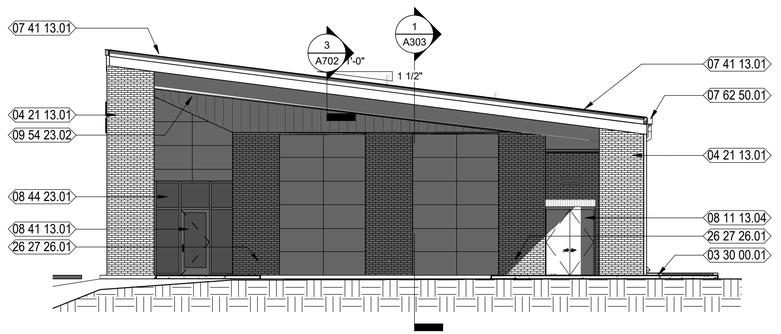
8' 4' 0' 8' 16'



EAST ELEVATION

3 / A201 — Scale: 1/8" = 1'-0"

8' 4' 0' 8' 16'



WEST ELEVATION

4 / A201 — Scale: 1/8" = 1'-0"

8' 4' 0' 8' 16'

KEYNOTES

01 00 00.09	BRICK PLANTER BOX - REFER TO DETAILS
01 00 00.10	BRICK WATER FEATURE - REFER TO DETAILS
03 30 00.01	CAST-IN-PLACE CONCRETE SLAB OVER VAPOR BARRIER OVER COMPACTED FILL - REFER TO STRUCTURAL DWGS FOR MORE INFORMATION
04 21 13.01	4" NOMINAL BRICK VENEER
07 41 13.01	SPEC'D PRE-FINISHED STRUCTURAL STANDING SEAM METAL ROOF SYSTEM.
07 41 13.02	PRE-FINISHED SHED RIDGE FLASHING
07 41 13.03	PRE-FINISHED RAKE FLASHING
07 62 50.01	PREFINISHED METAL GUTTERS WITH DOWNSPOUTS
07 62 50.02	SPEC'D PROTECTIVE BOOTS AT DOWNSPOUT LOCATIONS.
08 11 13.04	HOLLOW METAL PAIR OF DOORS AND FRAME AS SCHEDULED
08 41 13.01	PREFINISHED, ALUMINUM STOREFRONT ENTRANCE SYSTEM WITH IMPACT RESISTANT GLAZING; GLAZING COLOR: CLEAR BRUSHED ALUMINUM
08 44 23.01	SPECIFIED CURTAIN WALL SYSTEM; GLAZING COLOR: CLEAR BRUSHED ALUMINUM
08 51 13.01	SPECIFIED, PREFINISHED, FIXED ALUMINUM WINDOW AS SCHEDULED
09 34 00.01	SPECIFIED EXTERIOR TILE PANELS - 30"x60".
09 54 23.02	SUSPENDED, FIXED MOUNTED FOR WIND LOADING LINEAR METAL CEILING SYSTEM. BASIS OF DESIGN IS USG PLANX.
22 47 13.01	SPECIFIED DRINKING FOUNTAIN WITH BOTTLE FILLER
23 37 13.04	SPEC'D LOUVER - REFER TO MECH. DWGS. AND SPECS.
26 27 26.01	WEATHERPROOF GFI OUTLET - REFER TO ELECTRICAL DWGS.

GENERAL NOTES: EXTERIOR ELEVS.

1. CONTRACTOR SHALL COORDINATE WITH ALL TRADES PRIOR TO COMMENCING WORK
2. FIELD VERIFY ALL BUILT CONDITIONS PRIOR TO INSTALLATION.
3. COORDINATE WITH MECHANICAL, PLUMBING, ELECTRICAL, TELECOM AND SECURITY PRIOR TO COMMENCING WORK.
4. ALL WINDOWS, DOORS AND EXTERIOR CLADDING SHALL MEET WIND BOURNE REQUIREMENTS AS STATED IN STRUCTURAL DRAWINGS.
5. REFER TO ROOF PLAN FOR LOCATION OF GUTTERS AND DOWNSPOUTS.
6. REFER TO DOOR AND WINDOW SCHEDULES FOR MORE INFORMATION.
7. REFER TO STRUCTURAL DRAWINGS AND SPECIFICATIONS FOR COATINGS ON STRUCTURAL COMPONENTS.
8. REFER TO CIVIL DRAWINGS FOR ADDITIONAL INFORMATION.
9. DETAILS LABELED "TYPICAL DETAILS" ON THE DRAWINGS APPLY TO ALL SITUATIONS THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY DETAILED. SUCH DETAILS APPLY WHETHER OR NOT THEY ARE KEYED IN AT EACH LOCATION.

LEGEND:

- PREFINISHED STRUCTURAL STANDING SEAM METAL ROOF SYSTEM
- 101 — DOOR NUMBER; REFER TO DOOR SCHEDULE
- 1t — WINDOW NUMBER
- DS — PREFINISHED DOWNSPOUT; REFER TO ROOF PLAN
- LOUVER - REFER TO MECHANICAL DWGS.

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STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE

EXTERIOR ELEVATIONS

SHEET NUMBER.

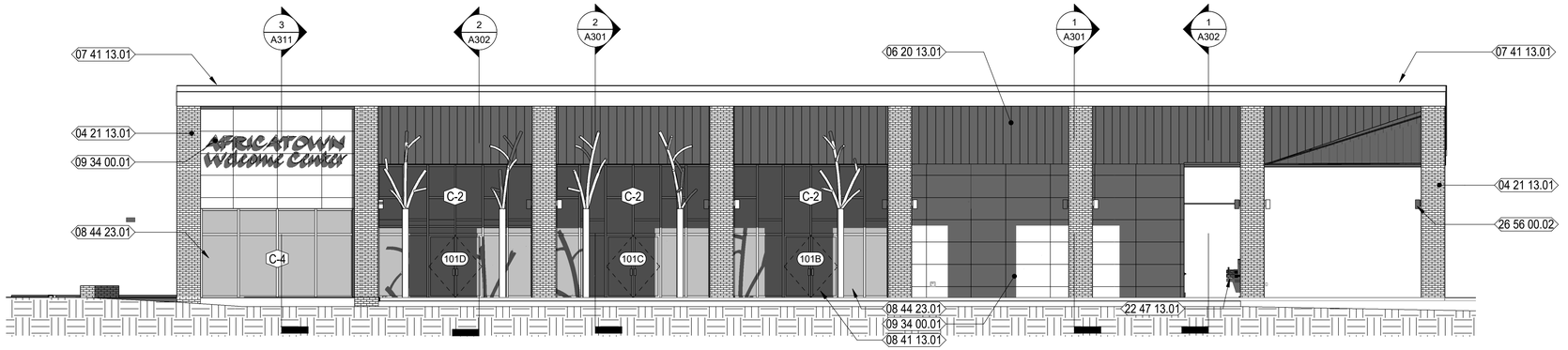
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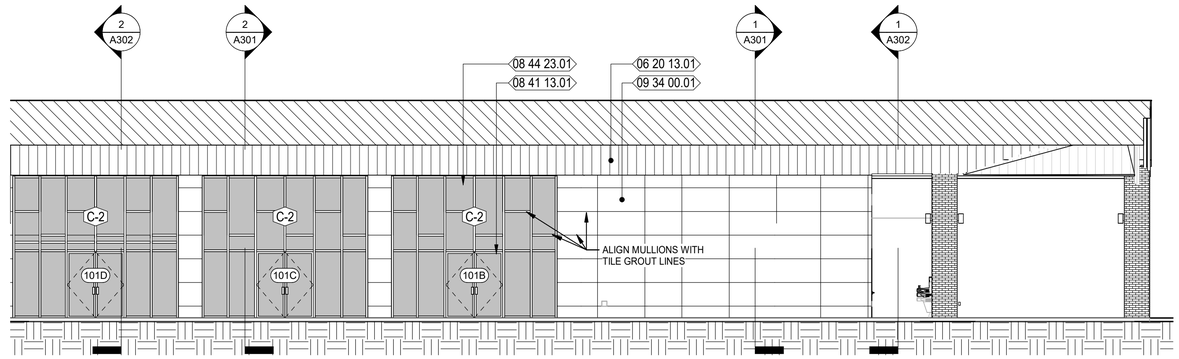
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1 A202 NORTH ELEVATION

Scale: 1/8" = 1'-0"

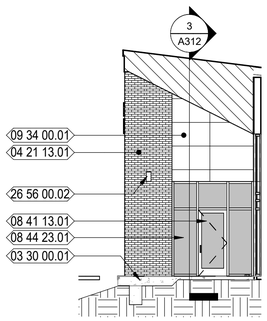
8' 4' 0' 8' 16'



2 A202 NORTH ELEVATION NO COLUMNS

Scale: 1/8" = 1'-0"

8' 4' 0' 8' 16'



3 A202 PARTIAL EAST ELEVATION

Scale: 1/8" = 1'-0"

8' 4' 0' 8' 16'

KEYNOTES

03 30 00.01	CAST-IN-PLACE CONCRETE SLAB OVER VAPOR BARRIER OVER COMPACTED FILL - REFER TO STRUCTURAL DWGS FOR MORE INFORMATION
04 21 13.01	4" NOMINAL BRICK VENEER
06 20 13.01	3/4" THICK CYPRESS BOARD CEILING OVER 5/8" PLYWOOD SHEATHING W/ LIQUID APPLIED VAPOR BARRIER BETWEEN PLYWOOD AND CYPRESS - CYPRESS TO BE STAINED AND SEALED FOR EXTERIOR USE. 40% NOMINAL 4" WIDE AND 60% NOMINAL 6" WIDE BOARDS SPACED 3/8" APART, TYPICAL.
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08 44 23.01	SPECIFIED CURTAIN WALL SYSTEM; GLAZING COLOR: CLEAR BRUSHED ALUMINUM
09 34 00.01	SPECIFIED EXTERIOR TILE PANELS - 30"x60".
22 47 13.01	SPECIFIED DRINKING FOUNTAIN WITH BOTTLE FILLER
26 56 00.02	SPEC'D WALL MOUNTED EXTERIOR LIGHTING FIXTURE; SEE ELECTRICAL

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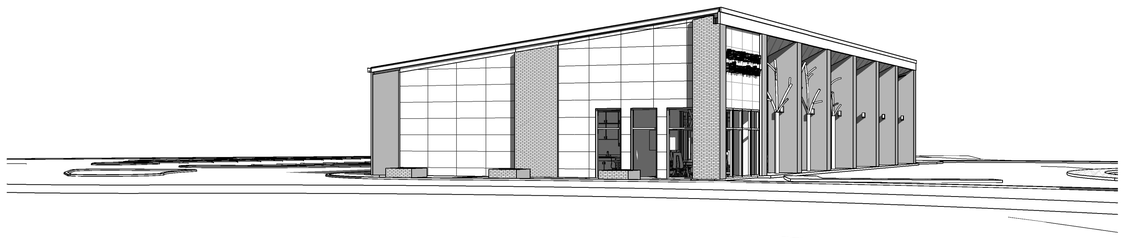
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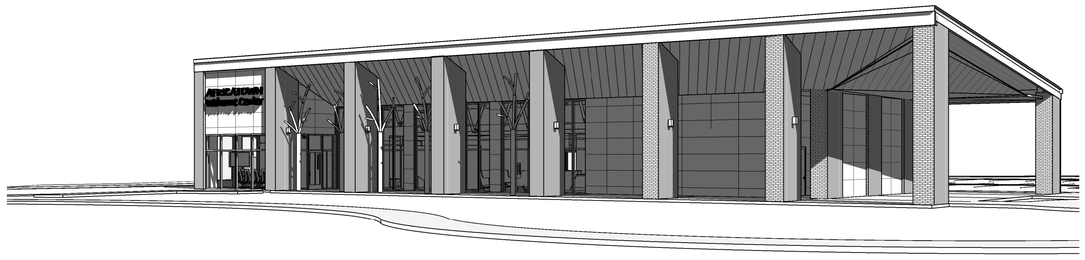
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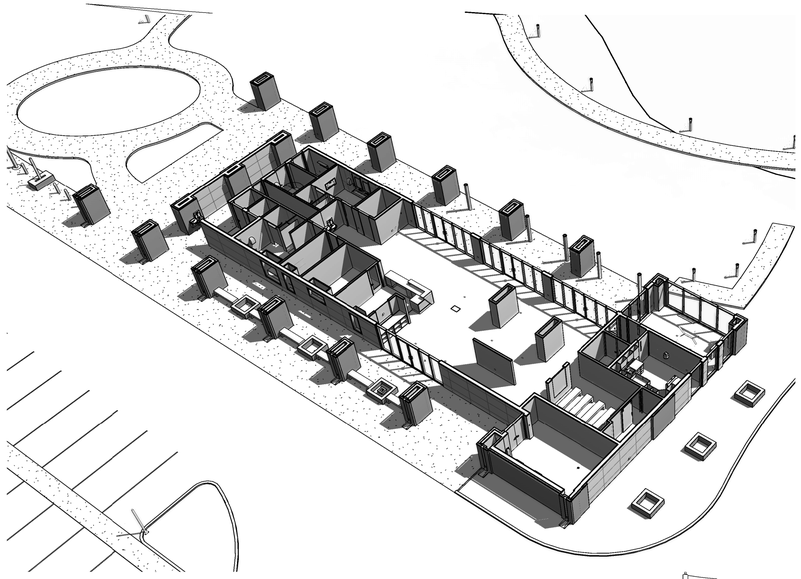
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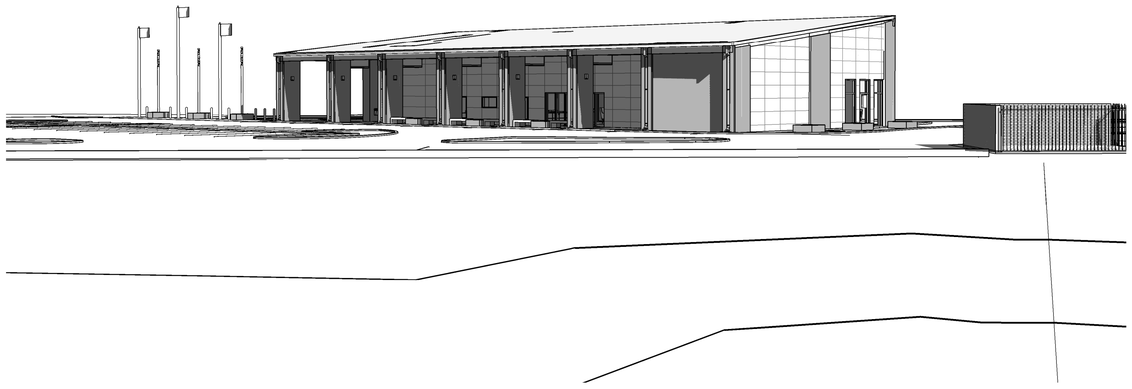
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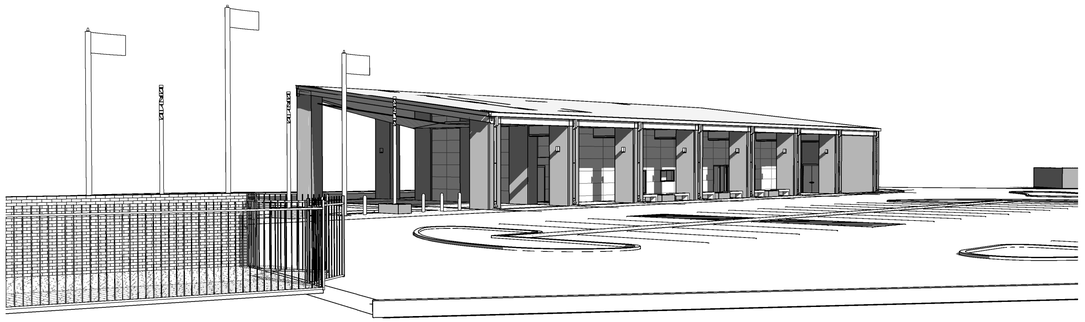
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AFRICATOWN WELCOME CENTER

City of Mobile

1959 Bay Bridge Road Cutoff
Mobile, AL. 36610

REVISIONS DESCRIPTION	DATE	REV
30% Submission	07/17/2023	A
90% Submission	10/02/2023	B
100% Submission	10/27/2023	C
100% Review Comments	12/7/2023	D

DATE: 10/27/2023
DESIGNED BY: A. Marasca
DRAWN BY: OG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE

EXTERIOR PERSPECTIVES

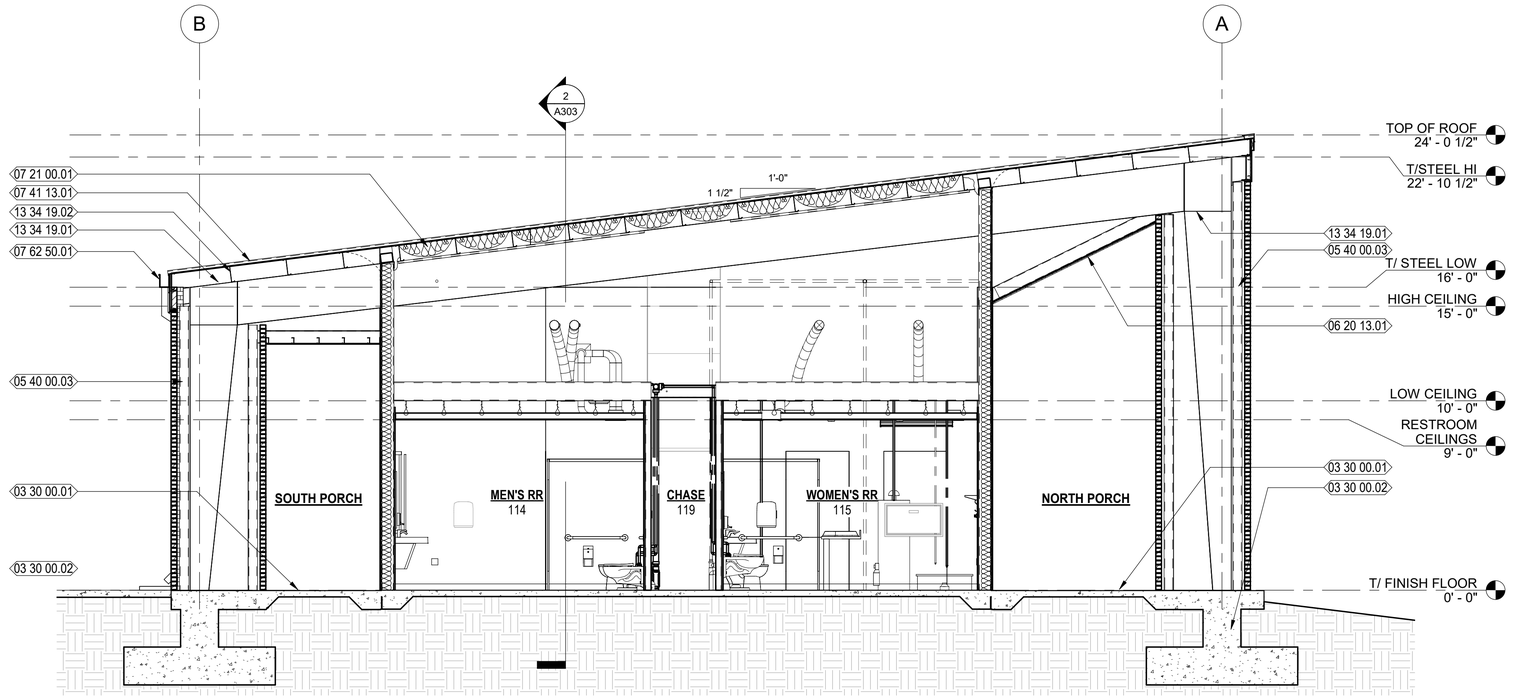
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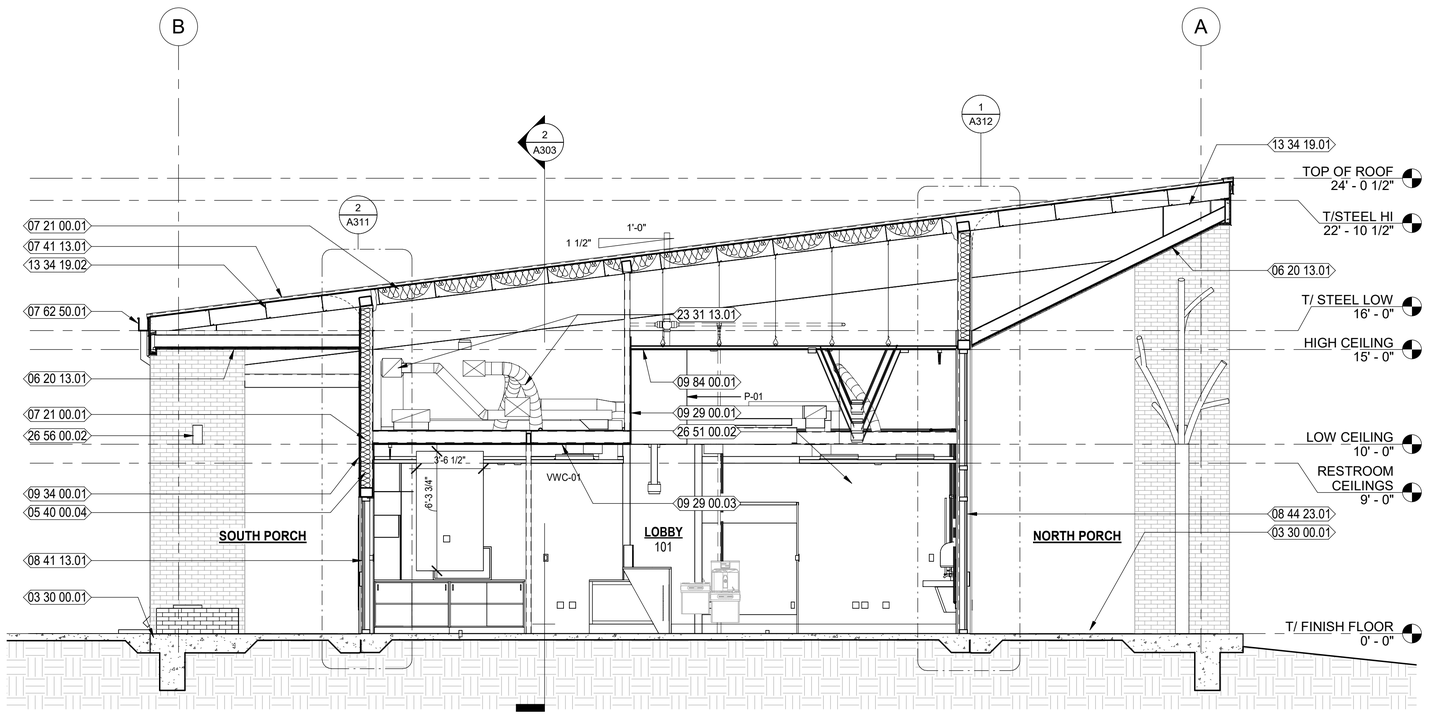
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1 A301 **LATITUDINAL BUILDING SECTION 1**

Scale: 1/4" = 1'-0"

4' 2' 0' 4' 8'



2 A301 **LATITUDINAL BUILDING SECTION 2**

Scale: 1/4" = 1'-0"

4' 2' 0' 4' 8'

KEYNOTES

03 30 00.01	CAST-IN-PLACE CONCRETE SLAB OVER VAPOR BARRIER OVER COMPACTED FILL - REFER TO STRUCTURAL DWGS FOR MORE INFORMATION
03 30 00.02	CAST-IN-PLACE CONCRETE FOOTING - REFER TO STRUCTURAL DWGS FOR MORE INFORMATION
05 40 00.03	6" GALVANIZED METAL STUDS AT 16" O.C. - REFER TO STRUCT. DWGS. FOR MORE INFORMATION
05 40 00.04	8" GALVANIZED METAL STUDS AT 16" O.C. - REFER TO STRUCT. DWGS. FOR MORE INFORMATION
06 20 13.01	3/4" THICK CYPRESS BOARD CEILING OVER 5/8" PLYWOOD SHEATHING W/ LIQUID APPLIED VAPOR BARRIER BETWEEN PLYWOOD AND CYPRESS - CYPRESS TO BE STAINED AND SEALED FOR EXTERIOR USE. 40% NOMINAL 4" WIDE AND 60% NOMINAL 6" WIDE BOARDS SPACED 3/8" APART, TYPICAL.
07 21 00.01	BATT INSULATION AS SHOWN
07 41 13.01	SPEC'D PRE-FINISHED STRUCTURAL STANDING SEAM METAL ROOF SYSTEM.
07 62 50.01	PREFINISHED METAL GUTTERS WITH DOWNSPOUTS
08 41 13.01	PREFINISHED, ALUMINUM STOREFRONT ENTRANCE SYSTEM WITH IMPACT RESISTANT GLAZING; GLAZING COLOR: CLEAR BRUSHED ALUMINUM
08 44 23.01	SPECIFIED CURTAIN WALL SYSTEM; GLAZING COLOR: CLEAR BRUSHED ALUMINUM
09 29 00.01	5/8" GYPSUM BOARD WITH SCHEDULED FINISH.
09 29 00.03	5/8" GYPSUM BOARD CEILING WITH SCHEDULED FINISH
09 34 00.01	SPECIFIED EXTERIOR TILE PANELS - 30"x60".
09 84 00.01	CEMENTITIOUS WOOD FIBER ACOUSTICAL CEILING SYSTEM - BASIS OF DESIGN TECTUM DESIGNART BY ARMSTRONG.
13 34 19.01	PRE-ENGINEERED METAL BUILDING RIGID FRAME.
13 34 19.02	PRE-ENGINEERED METAL BUILDING ROOF PURLIN.
23 31 13.01	DUCTWORK; SEE MECHANICAL
26 51 00.02	SPEC'D LED LIGHT FIXTURE; SEE ELECTRICAL DWGS.
26 56 00.02	SPEC'D WALL MOUNTED EXTERIOR LIGHTING FIXTURE; SEE ELECTRICAL

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City of Mobile

1959 Bay Bridge Road Cutoff
Mobile, AL. 36610

REVISIONS DESCRIPTION

DATE:	REV
07/17/2023	A
10/02/2023	B
10/27/2023	C

DATE:	10/27/2023
DESIGNED BY:	A. Marasca
DRAWN BY:	QG, AB, JE
CHECKED BY:	C. Echols
PROFESSION:	ARCHITECTURE
PROJECT ARCHITECT:	Andrew Marasca
M.M.A. PROJECT NUMBER:	502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE

BUILDING SECTIONS

SHEET NUMBER

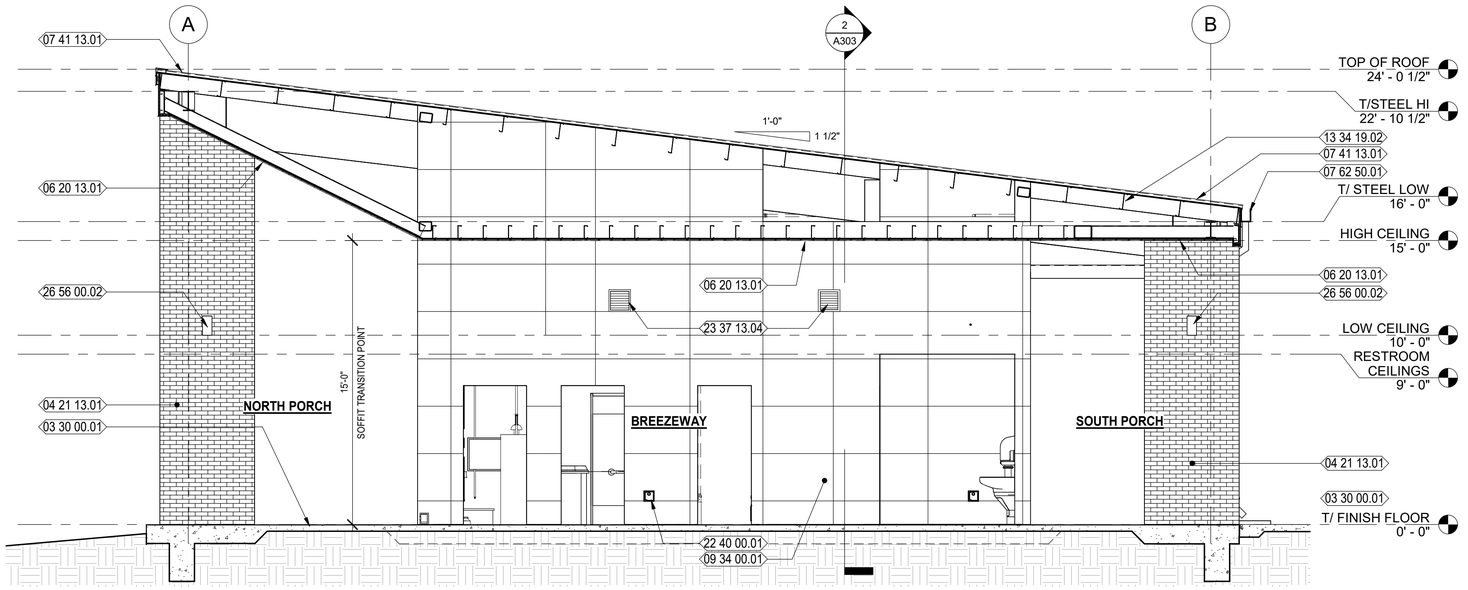
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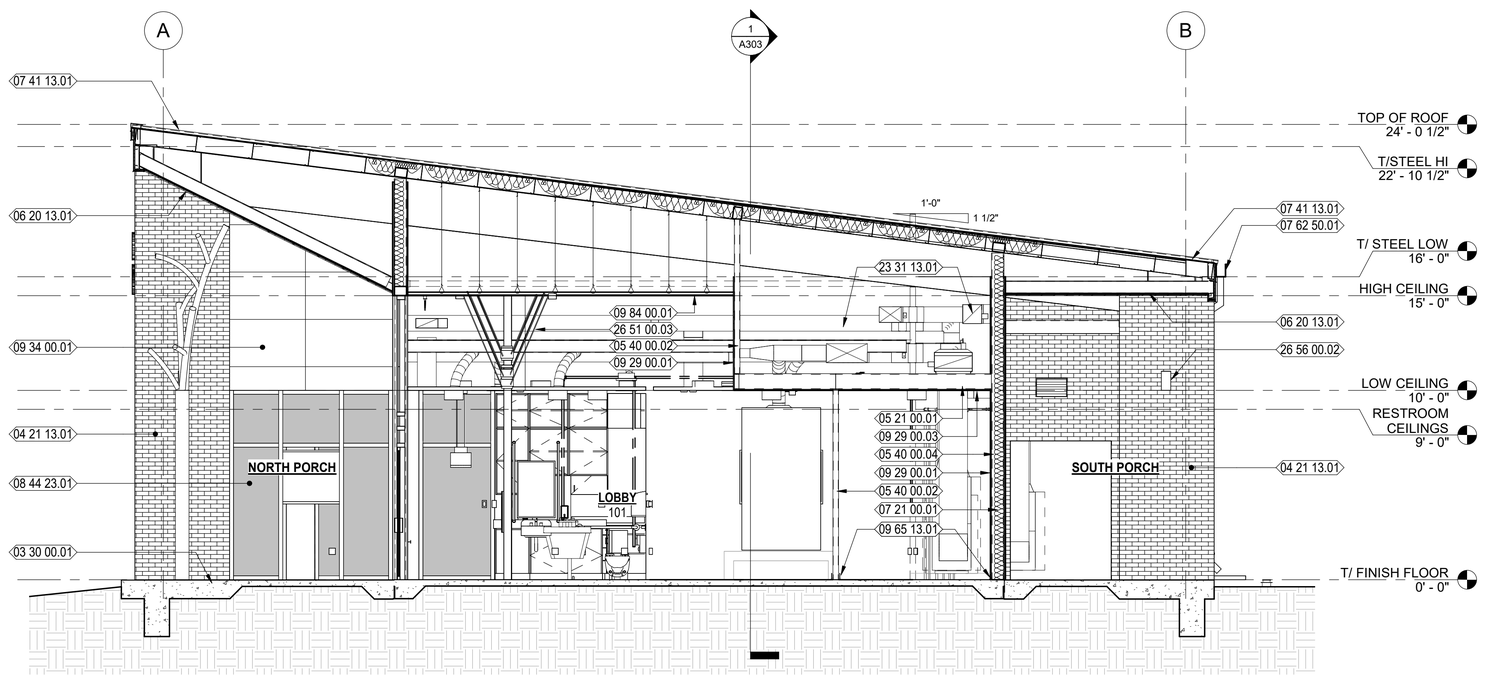
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1 A302 BUILDING SECTION AT WEST END OF BUILDING

Scale: 1/4" = 1'-0"

4' 2' 0' 4' 8'



2 A302 BUILDING SECTION AT EAST END OF LOBBY

Scale: 1/4" = 1'-0"

4' 2' 0' 4' 8'

KEYNOTES

03 30 00.01	CAST-IN-PLACE CONCRETE SLAB OVER VAPOR BARRIER OVER COMPACTED FILL - REFER TO STRUCTURAL DWGS FOR MORE INFORMATION
04 21 13.01	4" NOMINAL BRICK VENEER
05 21 00.01	
05 40 00.02	3 5/8" GALVANIZED METAL STUDS AT 16" O.C. - REFER TO STRUCT. DWGS. FOR MORE INFORMATION
05 40 00.04	8" GALVANIZED METAL STUDS AT 16" O.C. - REFER TO STRUCT. DWGS. FOR MORE INFORMATION
06 20 13.01	3/4" THICK CYPRESS BOARD CEILING OVER 5/8" PLYWOOD SHEATHING W/ LIQUID APPLIED VAPOR BARRIER BETWEEN PLYWOOD AND CYPRESS - CYPRESS TO BE STAINED AND SEALED FOR EXTERIOR USE. 40% NOMINAL 4" WIDE AND 60% NOMINAL 6" WIDE BOARDS SPACED 3/8" APART. TYPICAL.
07 21 00.01	BATT INSULATION AS SHOWN
07 41 13.01	SPEC'D PRE-FINISHED STRUCTURAL STANDING SEAM METAL ROOF SYSTEM.
07 62 50.01	PREFINISHED METAL GUTTERS WITH DOWNSPOUTS
08 44 23.01	SPECIFIED CURTAIN WALL SYSTEM; GLAZING COLOR: CLEAR BRUSHED ALUMINUM
09 29 00.01	5/8" GYPSUM BOARD WITH SCHEDULED FINISH.
09 29 00.03	5/8" GYPSUM BOARD CEILING WITH SCHEDULED FINISH
09 34 00.01	SPECIFIED EXTERIOR TILE PANELS - 30"x60".
09 65 13.01	SPEC'D RESILIENT BASE
09 84 00.01	CEMENTITIOUS WOOD FIBER ACOUSTICAL CEILING SYSTEM - BASIS OF DESIGN TECTUM DESIGNART BY ARMSTRONG.
13 34 19.02	PRE-ENGINEERED METAL BUILDING ROOF PURLIN.
22 40 00.01	HOSE BIB; SEE PLUMBING
23 31 13.01	DUCTWORK; SEE MECHANICAL
23 37 13.04	SPEC'D LOUVER - REFER TO MECH. DWGS. AND SPECS.
26 51 00.03	SPEC'D SURFACE MOUNTED LED LIGHT FIXTURE; SEE ELECTRICAL DWGS.
26 56 00.02	SPEC'D WALL MOUNTED EXTERIOR LIGHTING FIXTURE; SEE ELECTRICAL

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City of Mobile

1959 Bay Bridge Road Cutoff
Mobile, AL. 36610

REVISIONS DESCRIPTION
30% Submission
90% Submission
100% Submission

REV	DATE
A	07/17/2023
B	10/02/2023
C	10/27/2023

DATE: 10/27/2023
DESIGNED BY: A. Marasca
DRAWN BY: QG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE

BUILDING SECTIONS

SHEET NUMBER

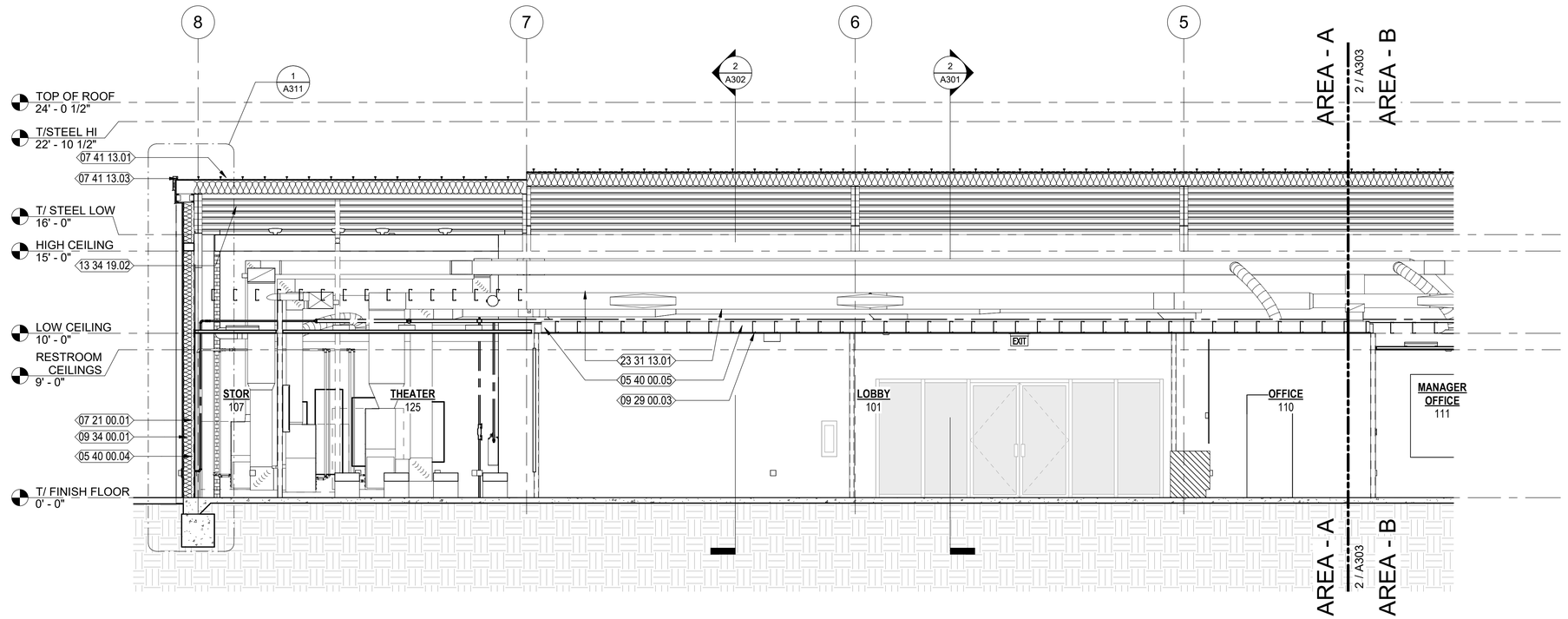
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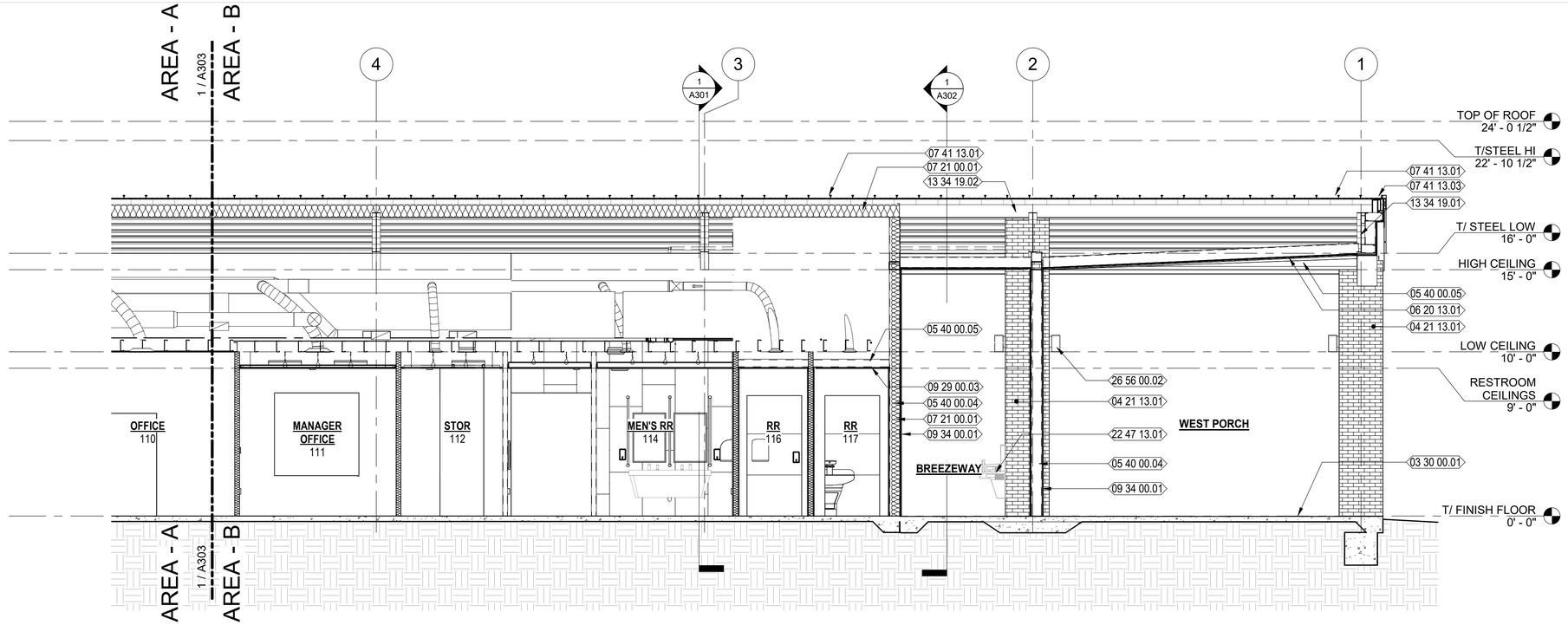
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1 A303 PARTIAL LONGITUTDINAL BUILDING SECTION - EAST END

Scale: 1/4" = 1'-0"



2 A303 PARTIAL LONGITUTDINAL BUILDING SECTION - WEST END

Scale: 1/4" = 1'-0"

4' 2' 0' 4' 8'

KEYNOTES

03 30 00.01	CAST-IN-PLACE CONCRETE SLAB OVER VAPOR BARRIER OVER COMPACTED FILL - REFER TO STRUCTURAL DWGS FOR MORE INFORMATION
04 21 13.01	4" NOMINAL BRICK VENEER
05 40 00.04	8" GALVANIZED METAL STUDS AT 16" O.C. - REFER TO STRUCT. DWGS. FOR MORE INFORMATION
05 40 00.05	8" GALVANIZED METAL JOISTS AT 16" O.C. - REFER TO STRUCT. DWGS. FOR MORE INFORMATION
06 20 13.01	3/4" THICK CYPRESS BOARD CEILING OVER 5/8" PLYWOOD SHEATHING W/ LIQUID APPLIED VAPOR BARRIER BETWEEN PLYWOOD AND CYPRESS - CYPRESS TO BE STAINED AND SEALED FOR EXTERIOR USE. 40% NOMINAL 4" WIDE AND 60% NOMINAL 6" WIDE BOARDS SPACED 3/8" APART. TYPICAL.
07 21 00.01	BATT INSULATION AS SHOWN
07 41 13.01	SPEC'D PRE-FINISHED STRUCTURAL STANDING SEAM METAL ROOF SYSTEM.
07 41 13.03	PRE-FINISHED RAKE FLASHING
09 29 00.03	5/8" GYPSUM BOARD CEILING WITH SCHEDULED FINISH
09 34 00.01	SPECIFIED EXTERIOR TILE PANELS - 30"x60".
13 34 19.01	PRE-ENGINEERED METAL BUILDING RIGID FRAME.
13 34 19.02	PRE-ENGINEERED METAL BUILDING ROOF PURLIN.
22 47 13.01	SPECIFIED DRINKING FOUNTAIN WITH BOTTLE FILLER
23 31 13.01	DUCTWORK; SEE MECHANICAL
26 56 00.02	SPEC'D WALL MOUNTED EXTERIOR LIGHTING FIXTURE; SEE ELECTRICAL

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City of Mobile
1959 Bay Bridge Road Cutoff
Mobile, AL. 36610

REVISIONS DESCRIPTION
30% Submission
90% Submission
100% Submission

REV	DATE
A	07/17/2023
B	10/02/2023
C	10/27/2023

DATE: 10/27/2023
DESIGNED BY: A. Marasca
DRAWN BY: QG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE
BUILDING SECTIONS

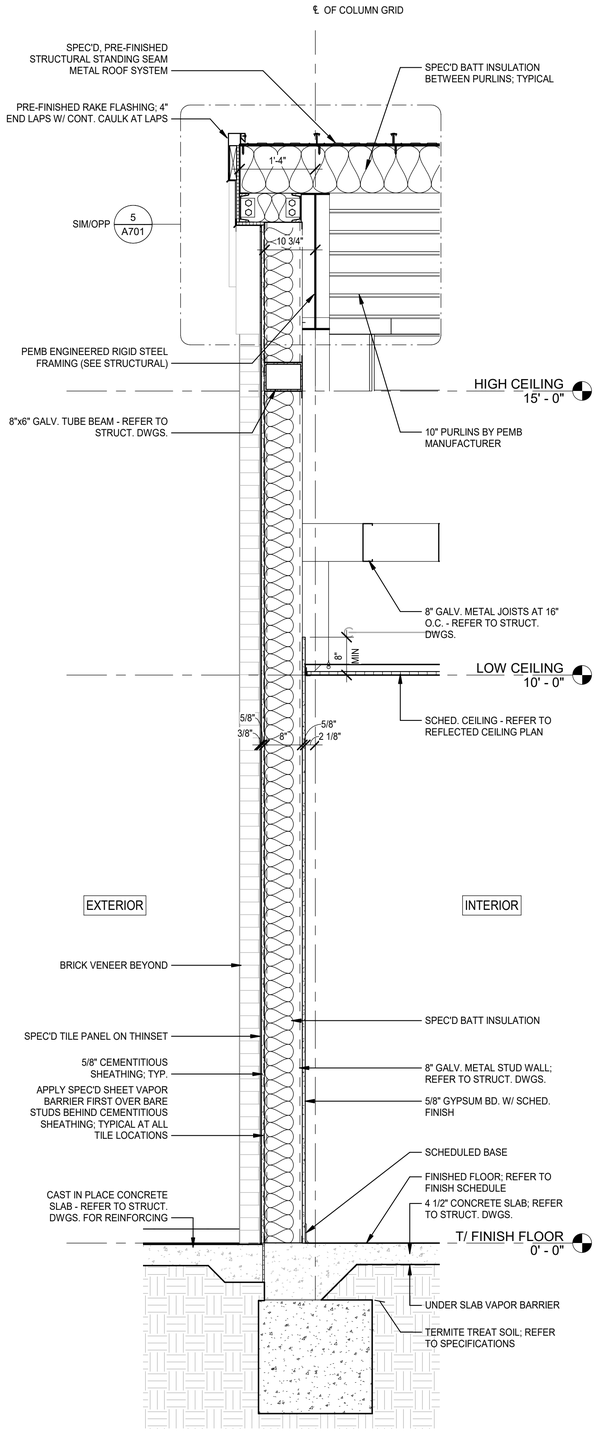
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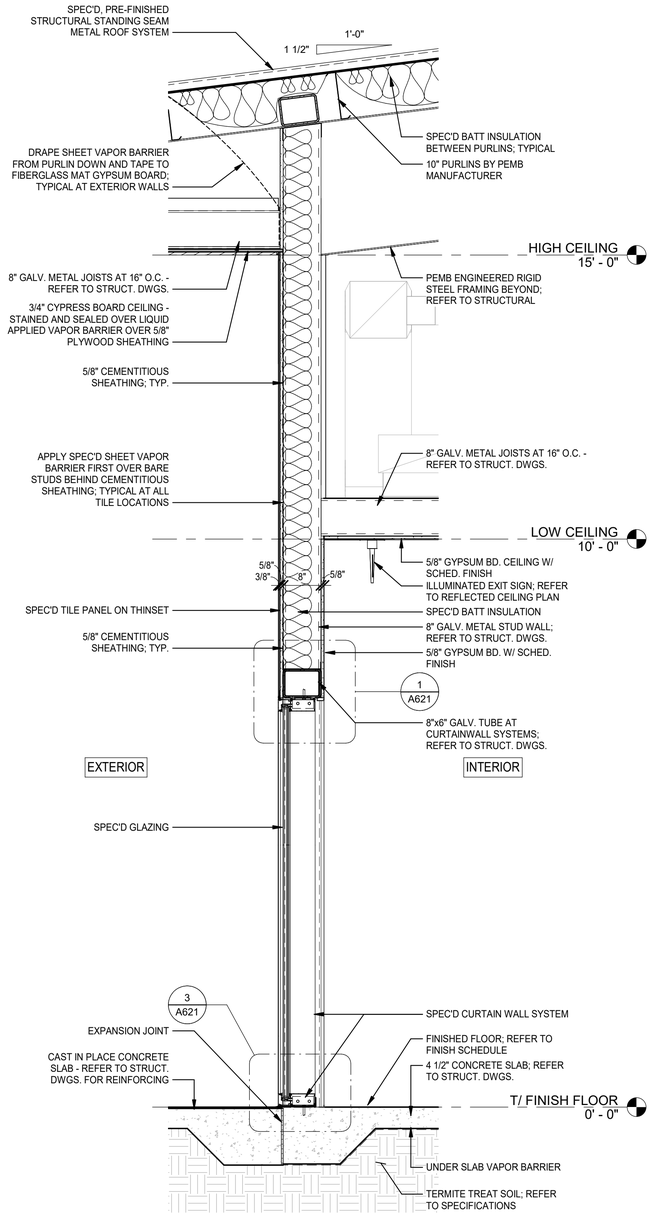
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1 A311 **TYPICAL RAKE END WALL SECTION**

Scale: 3/4" = 1'-0"

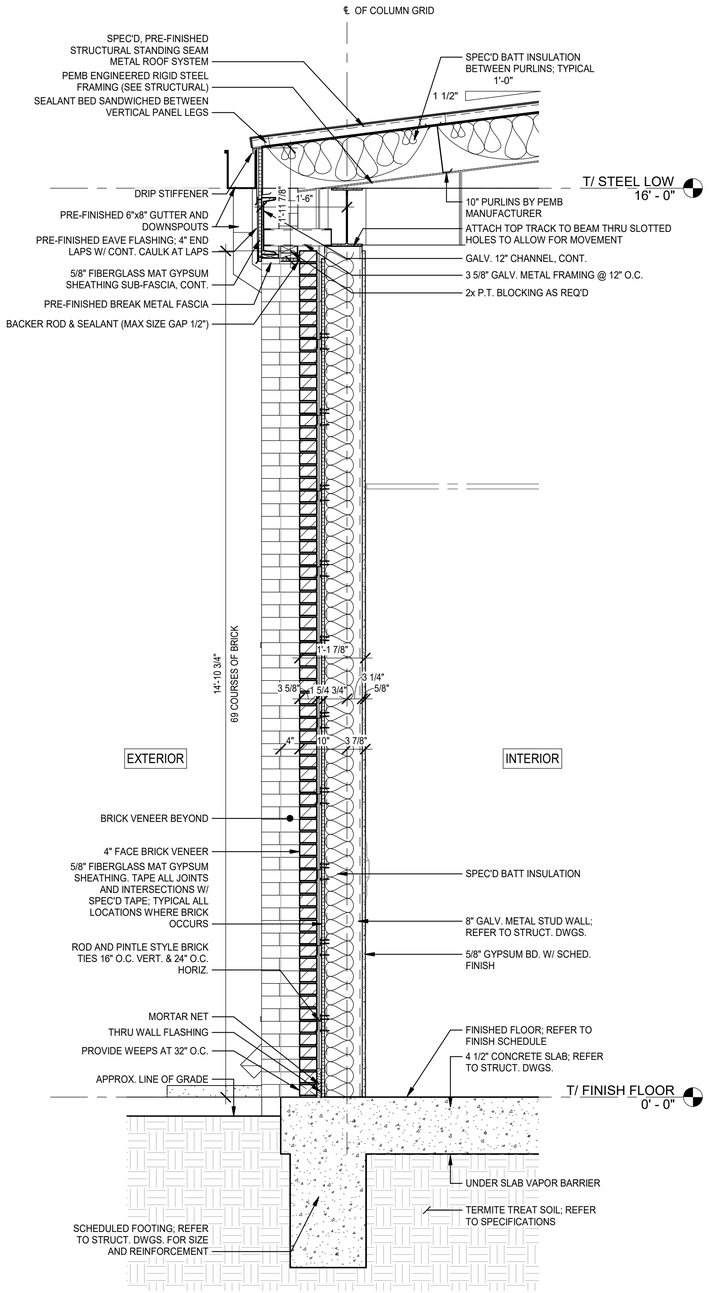
1' 6" 0' 1' 2'



2 A311 **SECTION AT SOUTH EXTERIOR WALL**

Scale: 3/4" = 1'-0"

1' 6" 0' 1' 2'



3 A311 **WALL SECTION AT BRICK WALL**

Scale: 3/4" = 1'-0"

1' 6" 0' 1' 2'

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Mobile, AL. 36610

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DATE:	10/27/2023
DESIGNED BY:	A. Marasca
DRAWN BY:	QG, AB, JE
CHECKED BY:	C. Echols
PROFESSION:	ARCHITECTURE
PROJECT ARCHITECT:	Andrew Marasca
M.M.A. PROJECT NUMBER:	502100720

STATE OF ALABAMA
ANDREW P. MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE

WALL SECTIONS

SHEET NUMBER

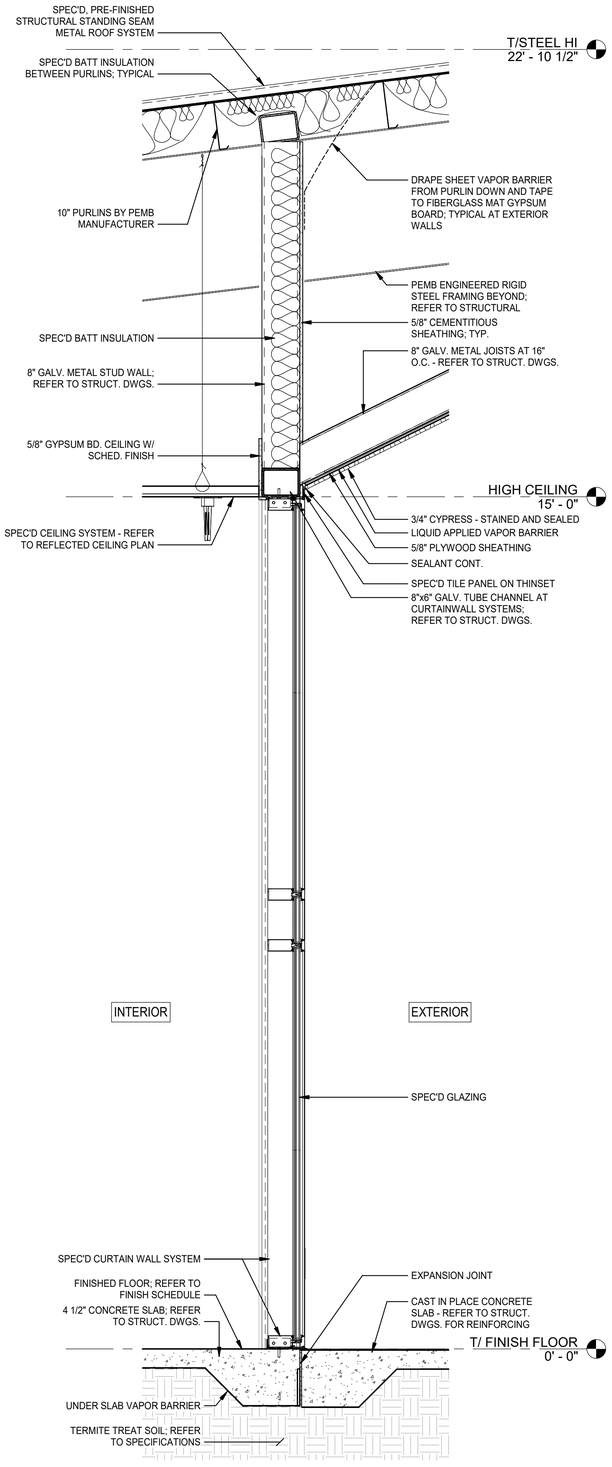
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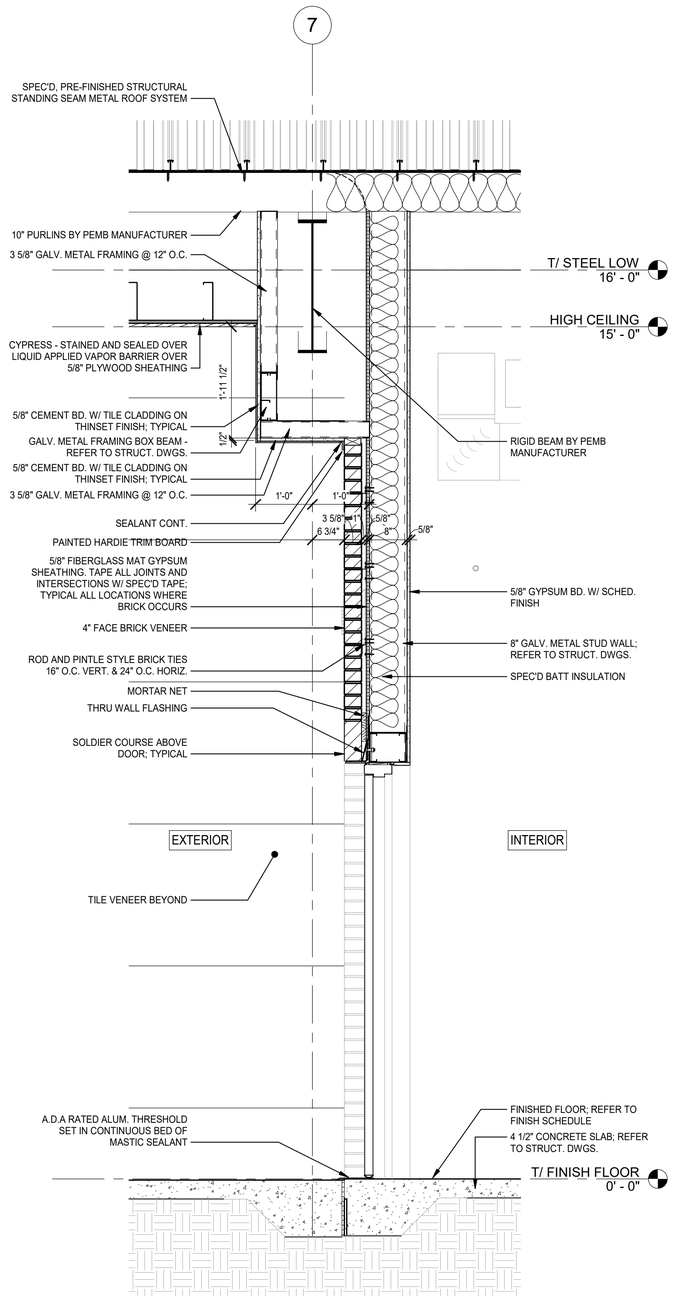
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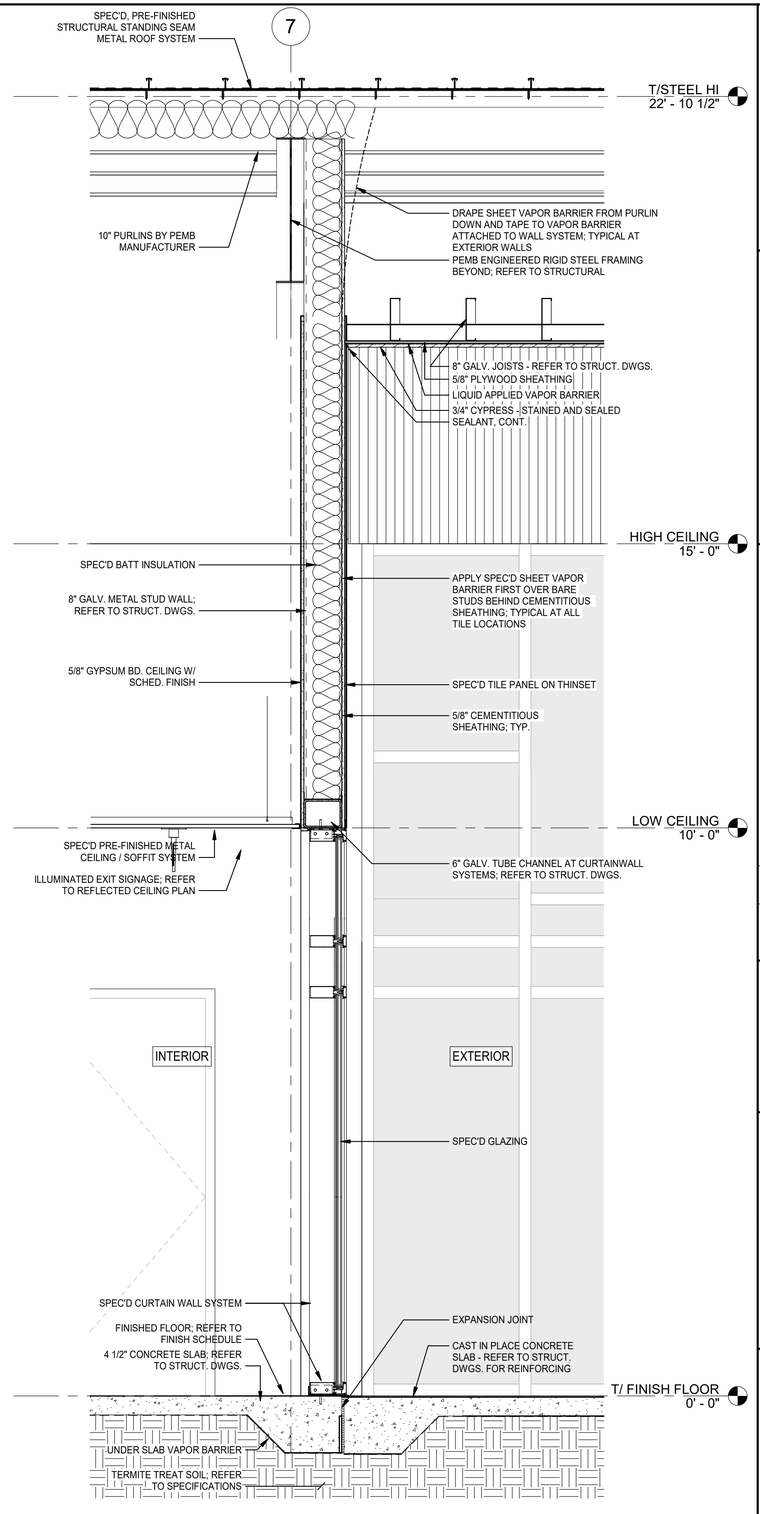
3/6/2024 11:43:34 AM



1 A312 **SECTION AT NORTH EXTERIOR WALL**
Scale: 3/4" = 1'-0"
1' 6" 0' 1' 2'



2 A312 **WALL SECTION AT SOUTH PORCH AND MECH. ROOM**
Scale: 3/4" = 1'-0"
1' 6" 0' 1' 2'



3 A312 **WALL SECTION AT NORTH PORCH AND CONF. ROOM**
Scale: 3/4" = 1'-0"
1' 6" 0' 1' 2'

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MOTT MACDONALD

AFRICATOWN WELCOME CENTER
City of Mobile
1959 Bay Bridge Road Cutoff
Mobile, AL. 36610

REVISIONS DESCRIPTION

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A	07/17/2023	30% Submission
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DATE: 10/27/2023
DESIGNED BY: A. Marasca
DRAWN BY: QG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE
WALL SECTIONS

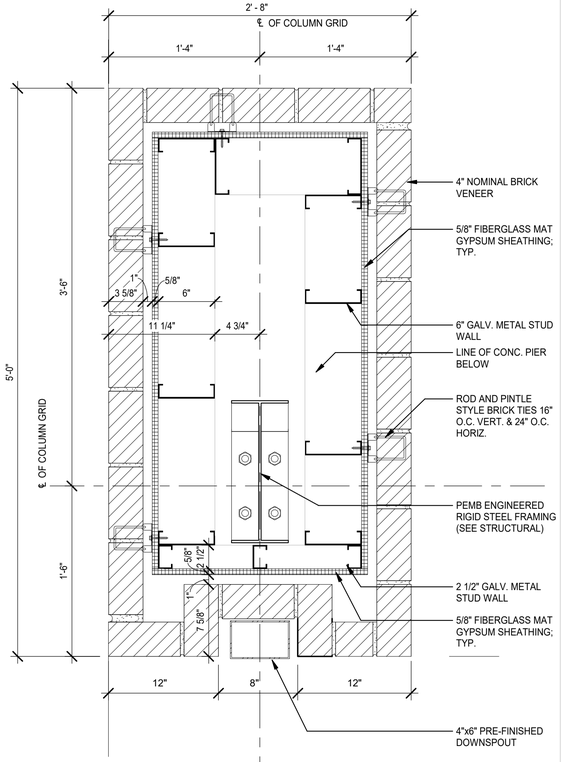
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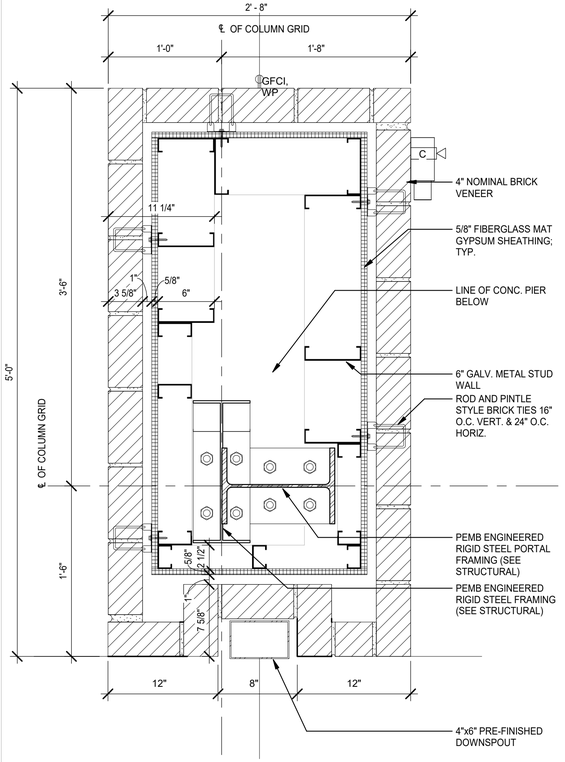
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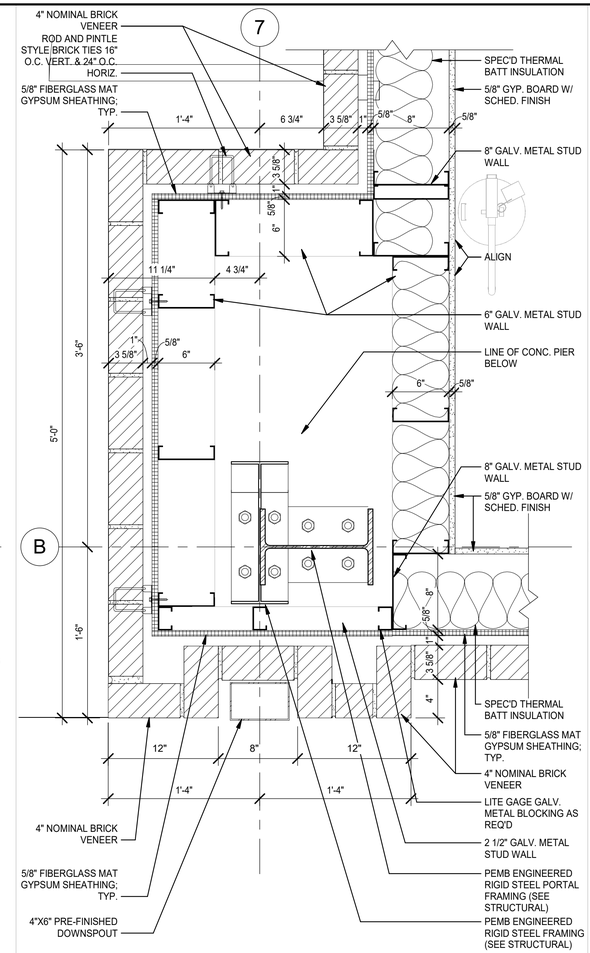
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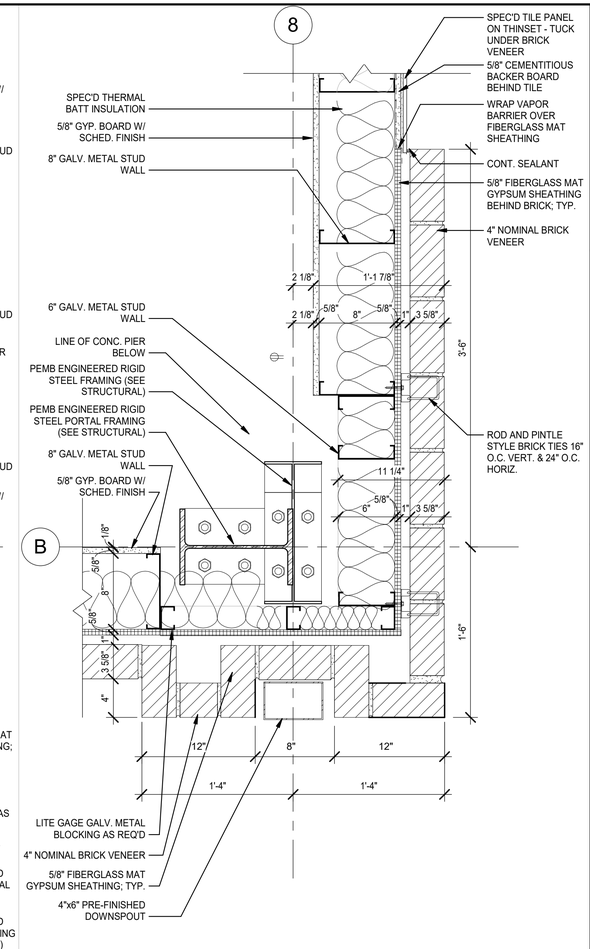
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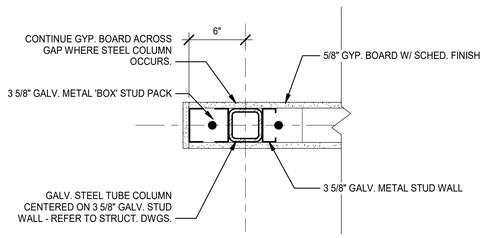


1 A331 **PLAN DETAIL - TYPICAL COLUMN**
Scale: 1 1/2" = 1'-0"

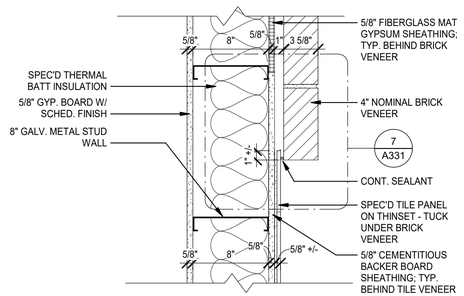
2 A331 **PLAN DETAIL - COL. @ PORTAL FRAME**
Scale: 1 1/2" = 1'-0"

3 A331 **PLAN DETAIL - COL. 7 @ MECH. RM.**
Scale: 1 1/2" = 1'-0"

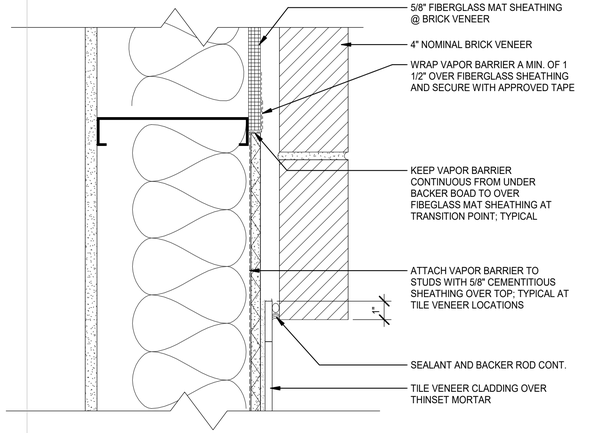
4 A331 **PLAN DETAIL - COL. 8 @ MECH. RM.**
Scale: 1 1/2" = 1'-0"



5 A331 **PLAN DETAIL @ STEEL COL IN WALL**
Scale: 1 1/2" = 1'-0"



6 A331 **PLAN DETAIL - TILE TO BRICK**
Scale: 1 1/2" = 1'-0"



7 A331 **TYPICAL VAPOR BARRIER TRANSITION DETAIL**
Scale: 3" = 1'-0"

TRUE NORTH / PROJECT NORTH

Mott MacDonald
Architects, Inc.
2211 Old Shell Road
Suite 2900
Mobile, AL 36602
Tel: (251) 343-4566
Fax:(251) 343-8902
Architects
Engineers
Surveyors

AFRICATOWN WELCOME CENTER

City of Mobile
1959 Bay Bridge Road Cutoff
Mobile, AL. 36610

REV	DATE	REVISIONS DESCRIPTION
A	07/17/2023	30% Submission
B	10/02/2023	90% Submission
C	10/27/2023	100% Submission

DATE: 10/27/2023
DESIGNED BY: A. Marasca
DRAWN BY: QG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE
PLAN AND WALL DETAILS

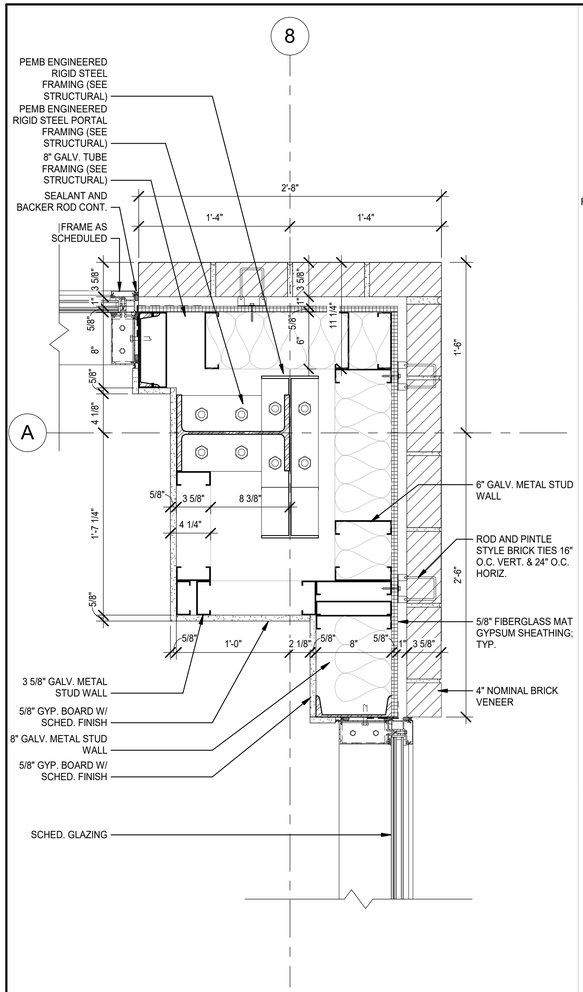
SHEET NUMBER.
A331

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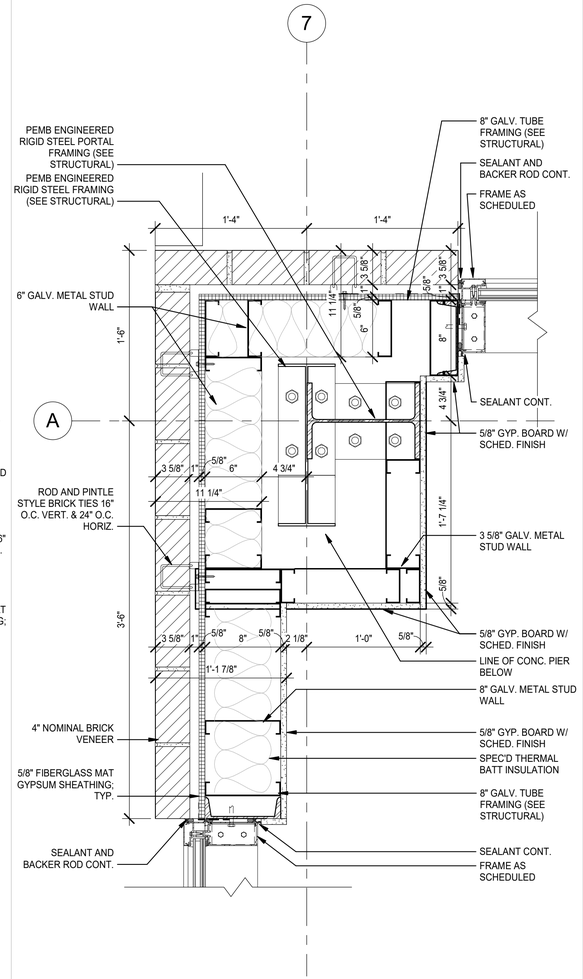
100% SUBMITTAL

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1 A332 **PLAN DETAIL - COL. 8 @ CONF. ROOM**

Scale: 1 1/2" = 1'-0"



2 A332 **PDTL_@COL 7 CONF. ROOM**

Scale: 1 1/2" = 1'-0"



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MOTT MACDONALD

AFRICATOWN WELCOME CENTER
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PLAN AND WALL DETAILS

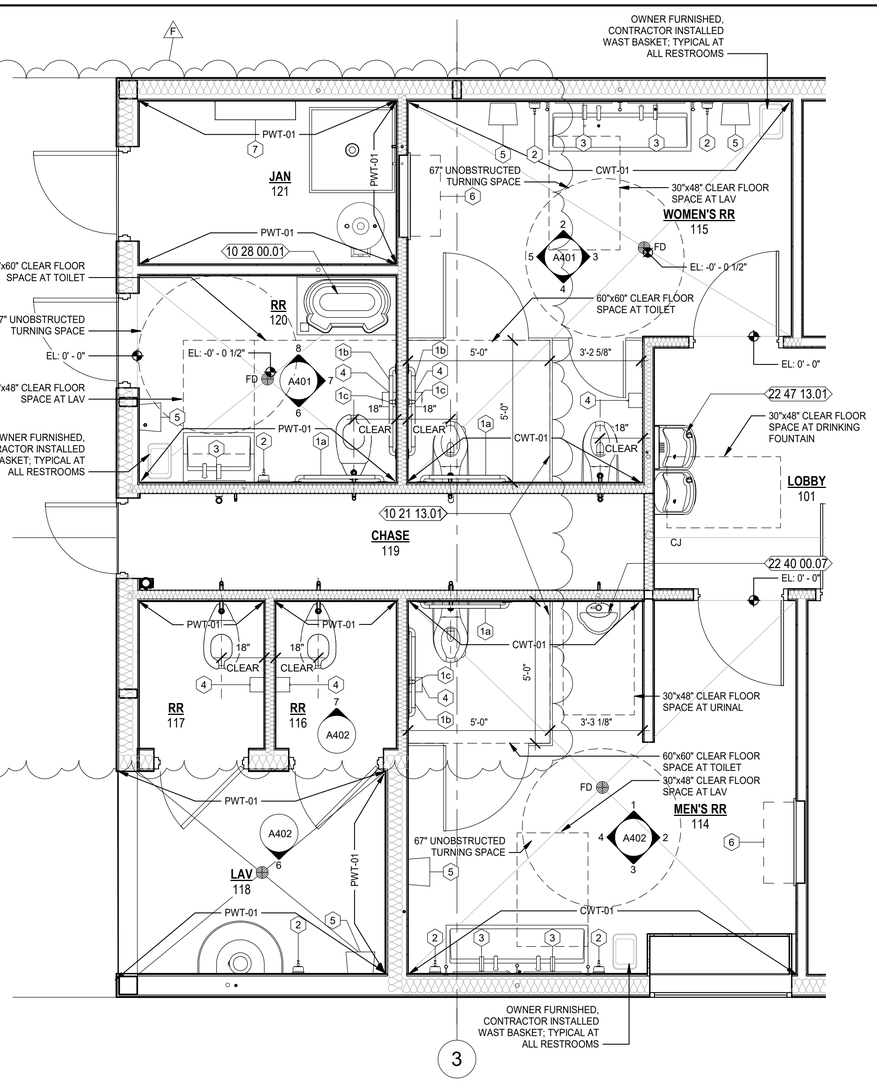
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1 A401 ENLARGED PLAN - RESTROOMS

Scale: 3/8" = 1'-0"

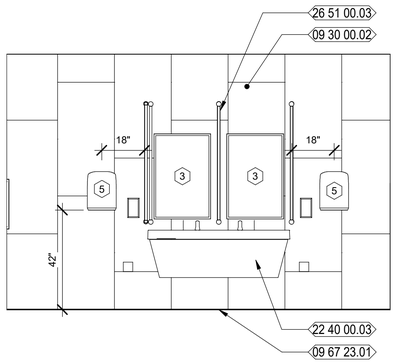
2' 1' 0' 2' 4'

TRUE NORTH

PROJECT NORTH

TOILET ACCESSORIES SCHEDULE

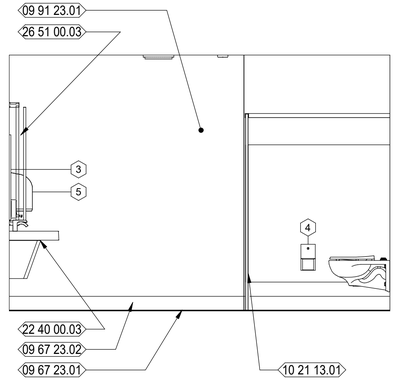
SYMBOL	DESCRIPTION	MODEL	REMARKS
1a	36" GRAB BAR	BRADLEY #812-000-36-2	MNT. @ 36" A.F.F.
1b	42" GRAB BAR	BRADLEY #812-000-42-2	MNT. @ 36" A.F.F.
1c	18" GRAB BAR	BRADLEY #812 000-18-2	MNT @ 40" A.F.F.
2	SOAP DISPENSER	OWNER FURNISHED CONTRACTOR INSTALLED	SEE ELEVATIONS
3	GLASS MIRROR WITH STAINLESS STEEL ANGLE FRAME	B-2908 Series	
4	SURFACE-MOUNTED MULTI-ROLL TOILET TISSUE DISPENSER	B-4288	Satin Finish
5	PAPER TOWEL DISPENSER	OWNER FURNISHED CONTRACTOR INSTALLED	SEE ELEVATIONS
6	BABY CHANGING STATION	BRADLEY - 962	Baby Changing Station
7	UTILITY SHELF W/ 4 HOOKS 3 HOLDERS 34" W	9933 BradEX	MNT. @ 60" A.F.F. TO TOP OF SHELF



2 A401 WOMEN'S RR NORTH VIEW

Scale: 3/8" = 1'-0"

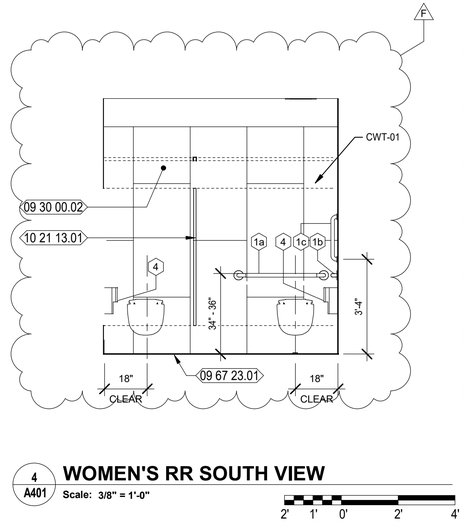
2' 1' 0' 2' 4'



3 A401 WOMEN'S RR EAST VIEW

Scale: 3/8" = 1'-0"

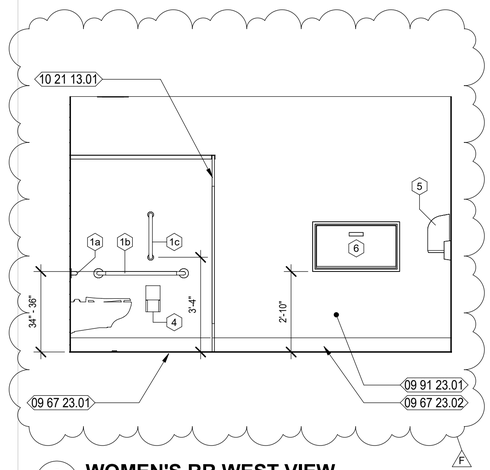
2' 1' 0' 2' 4'



4 A401 WOMEN'S RR SOUTH VIEW

Scale: 3/8" = 1'-0"

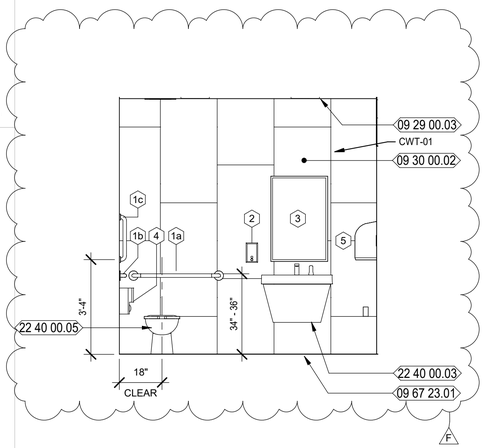
2' 1' 0' 2' 4'



5 A401 WOMEN'S RR WEST VIEW

Scale: 3/8" = 1'-0"

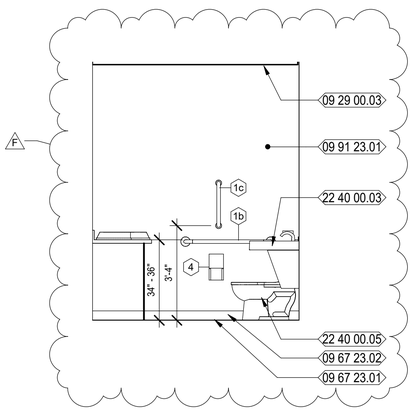
2' 1' 0' 2' 4'



6 A401 OUTDOOR ADA RR SOUTH VIEW

Scale: 3/8" = 1'-0"

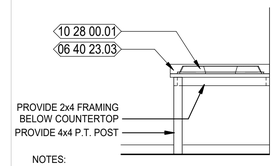
2' 1' 0' 2' 4'



7 A401 OUTDOOR ADA RR EAST VIEW

Scale: 3/8" = 1'-0"

2' 1' 0' 2' 4'



NOTES:

1. PAINT ALL EXPOSED LUMBER TO MATCH WALL COLOR.
2. SECURELY ATTACH FRAMING TO STUDS IN WALLS W/ (2) 1/4"x2 1/2" TEK SCREWS PER STUD.
3. SECURELY ATTACH POST TO CONCRETE FLOOR.

8 A401 OUTDOOR ADA RR NORTH

Scale: 3/8" = 1'-0"

2' 1' 0' 2' 4'

KEYNOTES

06 40 23.03	SPEC'D PLASTIC LAMINATE COUNTERTOP W/ BACKSPLASH
09 29 00.03	5/8" GYPSUM BOARD CEILING WITH SCHEDULED FINISH
09 30 00.02	SPEC'D CERAMIC TILE WALL
09 67 23.01	SPEC'D RESINOUS FLOORING
09 67 23.02	SPEC'D RESINOUS FLOORING TURNED UP WALL 4" TO CREATE A BASE.
09 91 23.01	SCHEDULED PAINTED WALL
10 21 13.01	SPEC'D TOILET PARTITIONS
10 28 00.01	COUNTERTOP SURFACE MOUNTED BABY CHANGING STATION. BASIS OF DESIGN IS KOALA KARE KB112-01CT.
22 40 00.03	SPEC'D LAVATORY W/ SPEC'D FAUCET
22 40 00.05	SPEC'D WATER CLOSET
22 40 00.07	SPEC'D URINAL
22 47 13.01	SPECIFIED DRINKING FOUNTAIN WITH BOTTLE FILLER
26 51 00.03	SPEC'D SURFACE MOUNTED LED LIGHT FIXTURE; SEE ELECTRICAL DWGS.

LEGEND

REF	REFRIGERATOR (N.I.C.); COORDINATE CASEWORK DIMENSIONS WIT SELECTED EQUIPMENT
FD	FILE DRAWER
T.V.	TELEVISION (N.I.C.); OWNER PURCHASED, CONTRACTOR INSTALLED.
B#	BASE CASEWORK DETAIL; SEE CASEWORK DETAILS FOR MORE INFORMATION
W#	WALL CASEWORK DETAIL; SEE CASEWORK DETAILS FOR MORE INFORMATION
SC#	SPECIALTY CASEWORK DETAIL; SEE CASEWORK DETAILS FOR MORE INFORMATION
(# SHS)	NUMBER OF SHELVES REQUIRED
CL	CABINET LOCK
CG	CORNER GUARD
ML	MELAMINE, COLOR WHITE
PTD	PAPER TOWEL DISPENSER - OFCI
PL	PLASTIC LAMINATE
SD	SOAP DISPENSER - OFCI
SS	SOLID SURFACE

GENERAL NOTES

1. COORDINATE WITH ROOM FINISH SCHEDULE AND FINISH INDEX FOR FINISHES OF ALL SURFACES NOT OUTLINED ON THESE DRAWINGS.
2. MANUFACTURER & MODEL NUMBERS ARE A BASIS OF DESIGN ONLY. NOT INTENDED TO LIMIT THE CONTRACTOR IN PRODUCT SELECTION.
3. PROVIDE PRESSURE TREATED WOOD BLOCKING IN STUD WALL CAVITIES WHERE REQUIRED TO SUPPORT WALL MOUNTED COMPONENTS, INCLUDING, BUT NOT LIMITED TO, UPPER CABINET AND COUNTER SUPPORT BRACKETS.
4. SEE FINISH SCHEDULE FOR ALL INTERIOR FINISHES.
5. OWNER/VENDOR PROVIDED ACCESSORIES SHALL BE COORDINATED WITH ALL TRADES PRIOR TO INSTALLATION.
6. APPLY SEALANT AROUND ALL FIXTURES & ACCESSORIES THAT ARE AGAINST THE WALL.
7. CONTRACTOR TO PROVIDE BLOCKING AT NEW WALLS FOR NEW TOILET ROOM ACCESSORIES.
8. ALL RESINOUS COVE BASE TO BE 6" IN HEIGHT WITH METAL TRIM TOP CAP.

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F	05/09/2024

REVISIONS DESCRIPTION
30% Submission
90% Submission
100% Submission
Permitting Revision 2

DATE: 10/27/2023
DESIGNED BY: A. Marasca
DRAWN BY: QG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE
ENLARGED RESTROOM PLANS

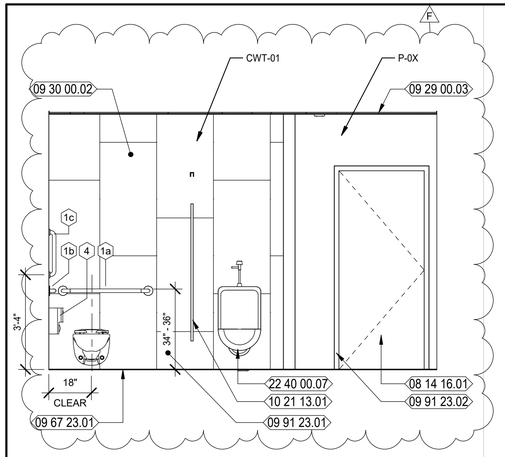
SHEET NUMBER
A401

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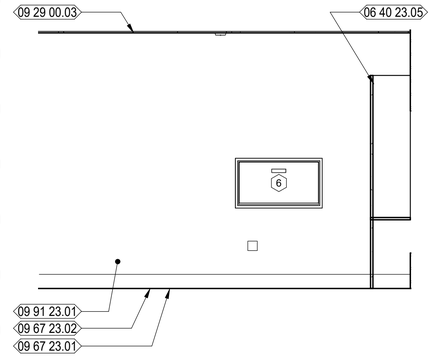
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1 A402 MEN'S RR NORTH VIEW

Scale: 3/8" = 1'-0"

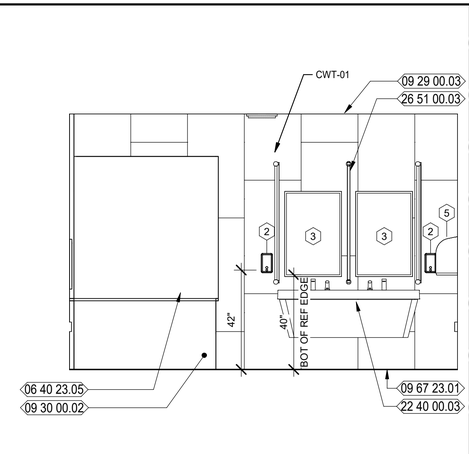
2' 1' 0' 2' 4'



2 A402 MEN'S RR EAST VIEW

Scale: 3/8" = 1'-0"

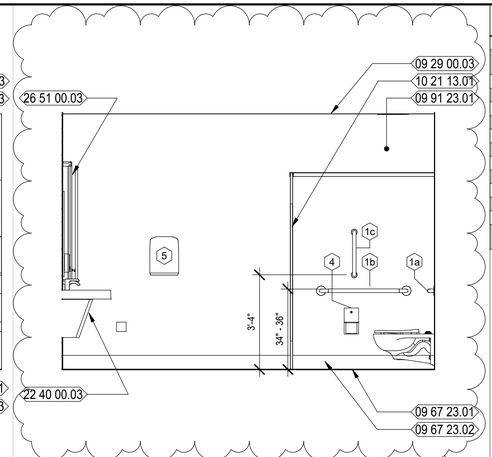
2' 1' 0' 2' 4'



3 A402 MEN'S RR SOUTH VIEW

Scale: 3/8" = 1'-0"

2' 1' 0' 2' 4'



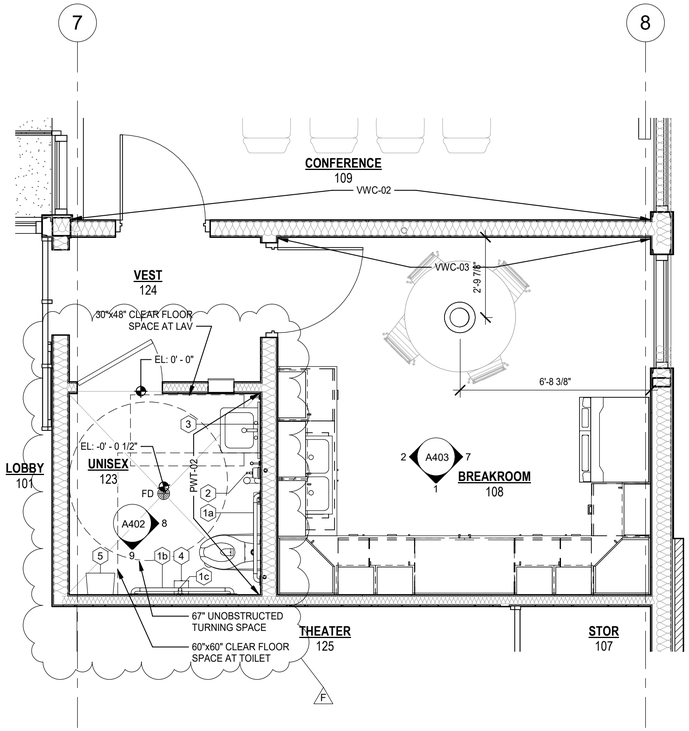
4 A402 MEN'S RR WEST VIEW

Scale: 3/8" = 1'-0"

2' 1' 0' 2' 4'

KEYNOTES

06 40 23.05	SPEC'D CUSTOM WINDOW BOX. REFER TO DETAILS.
08 14 16.01	FLUSH SOLID CORE WOOD DOOR WITH SCHEDULED FINISH; REFER TO DOOR SCHEDULE
09 29 00.03	5/8" GYPSUM BOARD CEILING WITH SCHEDULED FINISH
09 30 00.02	SPEC'D CERAMIC TILE WALL
09 30 00.04	SPEC'D PORCELAIN TILE WALL
09 67 23.01	SPEC'D RESINOUS FLOORING
09 67 23.02	SPEC'D RESINOUS FLOORING TURNED UP WALL 4" TO CREATE A BASE.
09 91 23.01	SCHEDULED PAINTED WALL
09 91 23.02	SCHEDULED PAINTED DOOR FRAME
10 21 13.01	SPEC'D TOILET PARTITIONS
22 40 00.03	SPEC'D LAVATORY W/ SPEC'D FAUCET
22 40 00.05	SPEC'D WATER CLOSET
22 40 00.07	SPEC'D URINAL
26 51 00.03	SPEC'D SURFACE MOUNTED LED LIGHT FIXTURE; SEE ELECTRICAL DWGS.



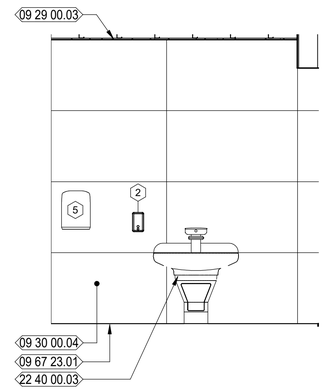
5 A402 ENLARGED PLAN - BREAKROOM AND UNISEX TOILET

Scale: 3/8" = 1'-0"

2' 1' 0' 2' 4'

TRUE NORTH

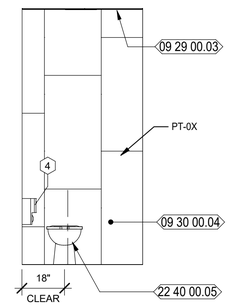
PROJECT NORTH



6 A402 EXTERIOR LAV SOUTH VIEW

Scale: 3/8" = 1'-0"

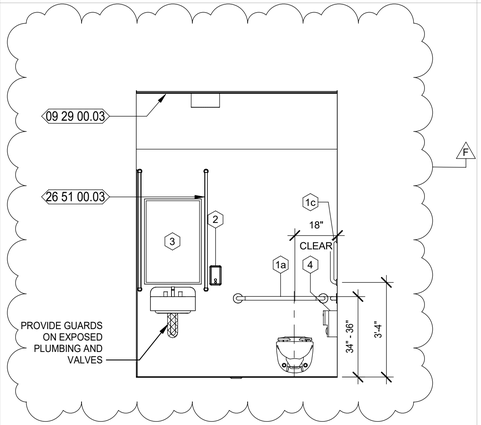
2' 1' 0' 2' 4'



7 A402 TYPICAL OUTDOOR RR

Scale: 3/8" = 1'-0"

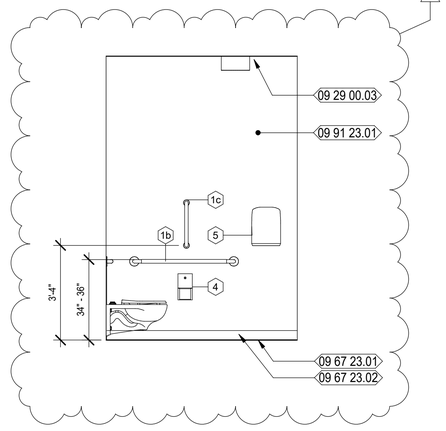
2' 1' 0' 2' 4'



8 A402 UNISEX RR EAST VIEW

Scale: 3/8" = 1'-0"

2' 1' 0' 2' 4'



9 A402 UNISEX RR SOUTH VIEW

Scale: 3/8" = 1'-0"

2' 1' 0' 2' 4'

LEGEND

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CG	CORNER GUARD
ML	MELAMINE, COLOR WHITE
PTD	PAPER TOWEL DISPENSER - OFCI
PL	PLASTIC LAMINATE
SD	SOAP DISPENSER - OFCI
SS	SOLID SURFACE

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D	12/7/2023	100% Review Comments
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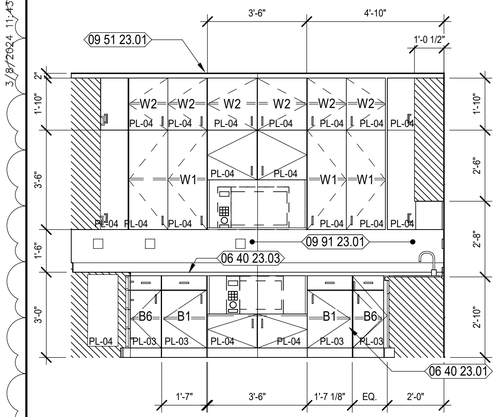
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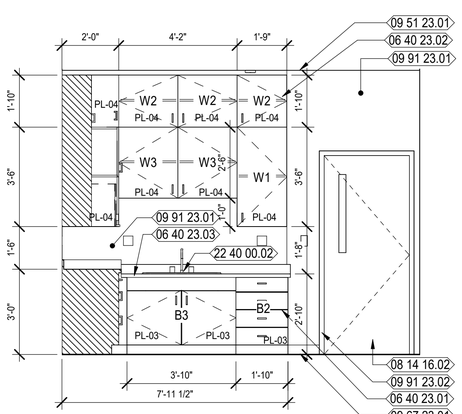
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3/8/2024 11:43:49 AM



1 A403 BREAKROOM SOUTH ELEVATION

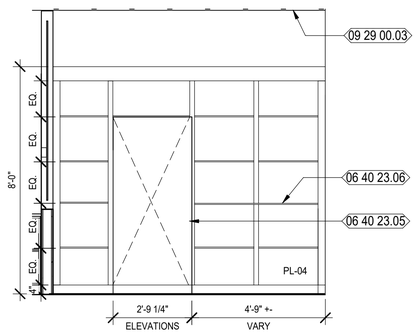
Scale: 3/8" = 1'-0"



2 A403 BREAKROOM WEST ELEVATION

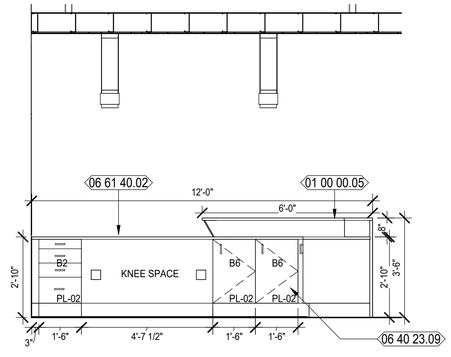
Scale: 3/8" = 1'-0"

NOTE:
SOUTH ELEVATION IN THE OFFICE (ROOM 111) AND STORAGE (ROOM 112) ARE SIMILAR.



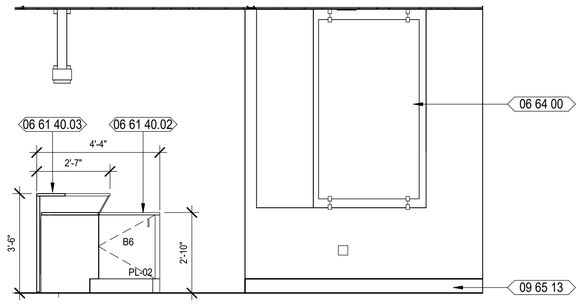
4 A403 RECEPTION SOUTH ELEVATION

Scale: 3/8" = 1'-0"



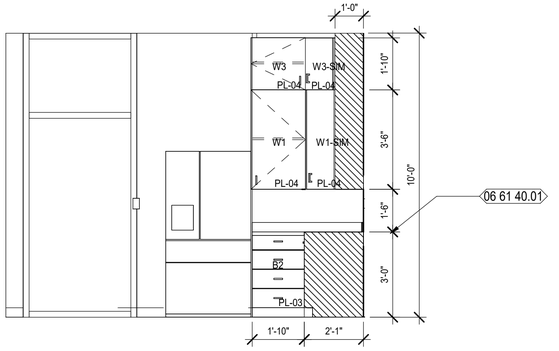
5 A403 RECEPTION NORTH ELEVATION

Scale: 3/8" = 1'-0"



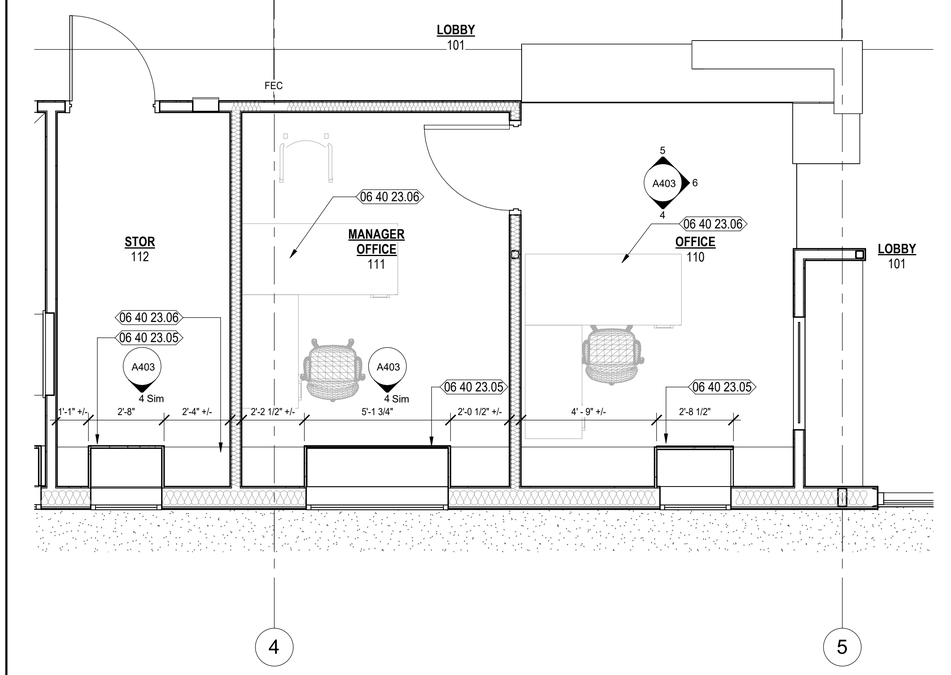
6 A403 RECEPTION EAST ELEVATION

Scale: 3/8" = 1'-0"



7 A403 BREAKROOM EAST ELEVATION

Scale: 3/8" = 1'-0"



TRUE NORTH PROJECT NORTH

3 A403 ENLARGED PLAN - OFFICES AND STORE ROOM

Scale: 3/8" = 1'-0"

KEYNOTES

01 00 00.05	RECEPTION DESK - THE TRANSACTION HIGH CORNER COUNTER OVERLAY IS FINISHED WITH METAL LAMINATE AND THE HORIZONTAL WORK SURFACE IS SOLID SURFACE<USE A MATCHING METAL TRIM AT JOINTS.
06 40 23.01	SPEC'D PLASTIC LAMINATE BASE CABINETS
06 40 23.02	SPEC'D PLASTIC LAMINATE WALL HUNG CABINETS
06 40 23.03	SPEC'D PLASTIC LAMINATE COUNTERTOP W/ BACKSPLASH
06 40 23.05	SPEC'D CUSTOM WINDOW BOX. REFER TO DETAILS.
06 40 23.06	SPEC'D CUSTOM SHELVING UNIT.
06 40 23.09	SPEC'D CUSTOM LAMINATE FACE (PLAM-02).
06 61 40.01	SPEC'D SOLID SURFACE COUNTERTOP WITH BACKSPLASH
06 61 40.02	SPEC'D SOLID SURFACE COUNTERTOP
06 61 40.03	SPEC'D SOLID SURFACE COUNTERTOP (SS-02).
06 64 00	PLASTIC PANELING
08 14 16.02	FLUSH SOLID CORE WOOD DOOR WITH NARROW VIEW LITE WITH SCHEDULED FINISH; REFER TO DOOR SCHEDULE
09 29 00.03	5/8" GYPSUM BOARD CEILING WITH SCHEDULED FINISH
09 51 23.01	SUSPENDED ACOUSTICAL TILE AND GRID WITH #9 HANGER WIRE 48" OC 3 TWIST MIN., SEE FINISH SCHEDULE AND REFLECTED CEILING PLAN
09 65 13	RESILIENT BASE AND ACCESSORIES
09 67 23.01	SPEC'D RESINOUS FLOORING
09 91 23.01	SCHEDULED PAINTED WALL
09 91 23.02	SCHEDULED PAINTED DOOR FRAME
22 40 00.02	SPEC'D STAINLESS STEEL SINK W/ SPEC'D FAUCET

LEGEND

REF	REFRIGERATOR (N.I.C.); COORDINATE CASEWORK DIMENSIONS WIT SELECTED EQUIPMENT
FD	FILE DRAWER
T.V.	TELEVISION (N.I.C.); OWNER PURCHASED, CONTRACTOR INSTALLED.
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CL	CABINET LOCK
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PTD	PAPER TOWEL DISPENSER - OFCI
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8. ALL RESINOUS COVE BASE TO BE 6" IN HEIGHT WITH METAL TRIM TOP CAP.

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MOTT MACDONALD

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DATE: 10/27/2023
DESIGNED BY: A. Marasca
DRAWN BY: OG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE
INTERIOR ELEVATIONS

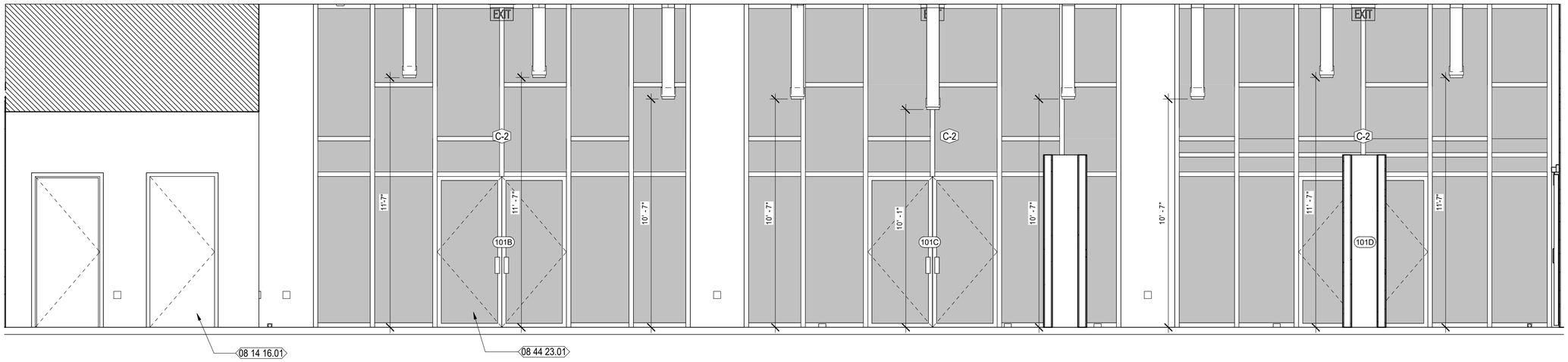
SHEET NUMBER
A403

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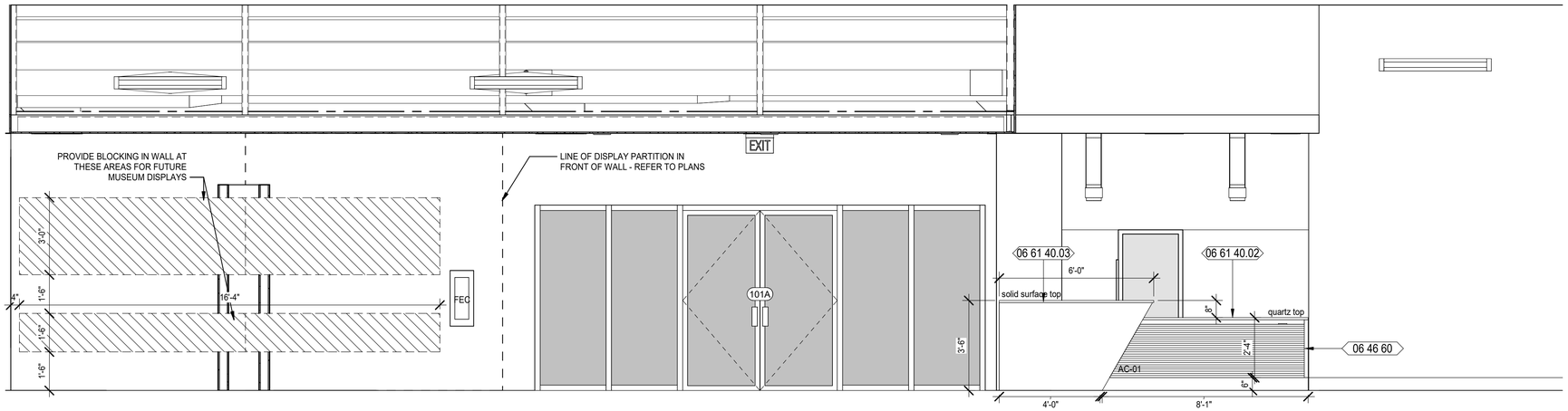
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1 A404 ELEVATION NORTH LOBBY

Scale: 3/8" = 1'-0"

2' 1' 0' 2' 4'



2 A404 ELEVATION SOUTH LOBBY

Scale: 3/8" = 1'-0"

2' 1' 0' 2' 4'

KEYNOTES

06 46 60	PLASTIC FABRICATIONS - ACRYLIC OVER A LIGHT BOX (AC-01).
06 61 40.02	SPEC'D SOLID SURFACE COUNTERTOP
06 61 40.03	SPEC'D SOLID SURFACE COUNTERTOP (SS-02).
08 14 16.01	FLUSH SOLID CORE WOOD DOOR WITH SCHEDULED FINISH; REFER TO DOOR SCHEDULE
08 44 23.01	SPECIFIED CURTAIN WALL SYSTEM; GLAZING COLOR: CLEAR BRUSHED ALUMINUM

LEGEND

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CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

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REGISTERED ARCHITECT

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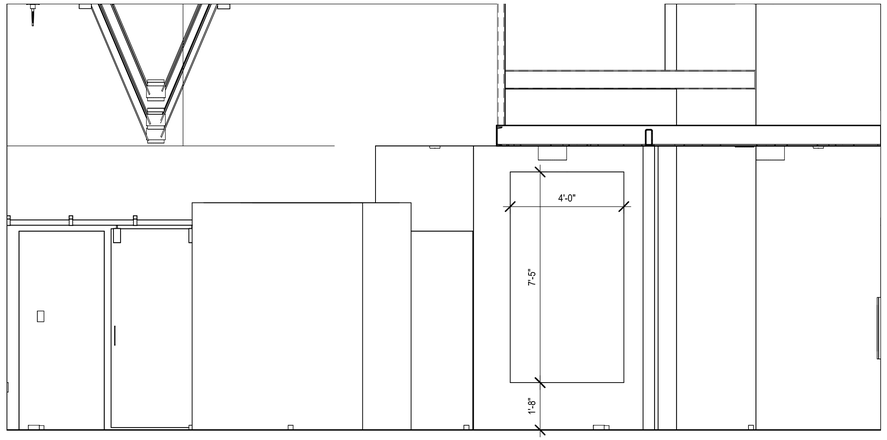
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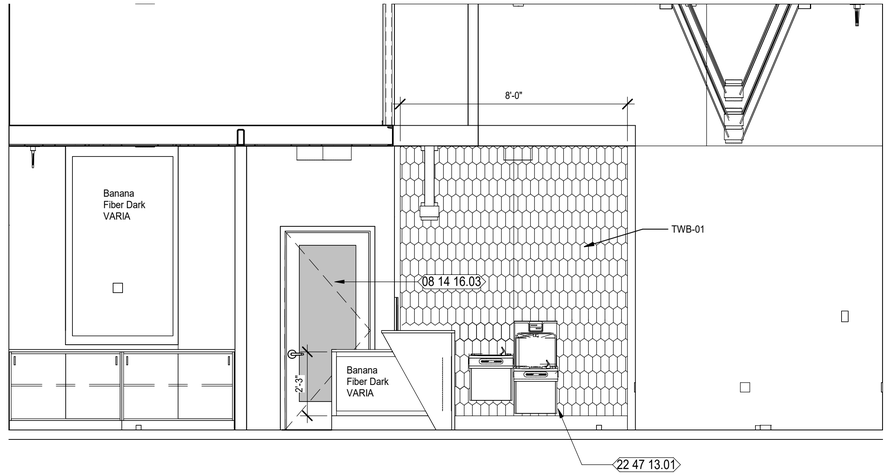
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1 A405 **EAST LOBBY ELEVATION**

Scale: 3/8" = 1'-0"

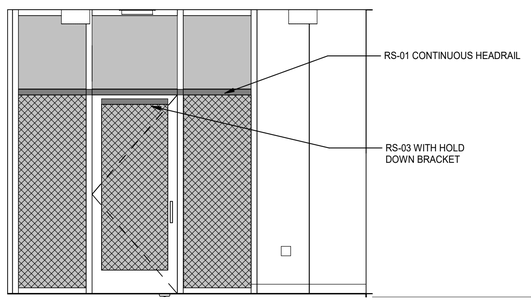
2' 1' 0' 2' 4'



2 A405 **WEST LOBBY ELEVATION**

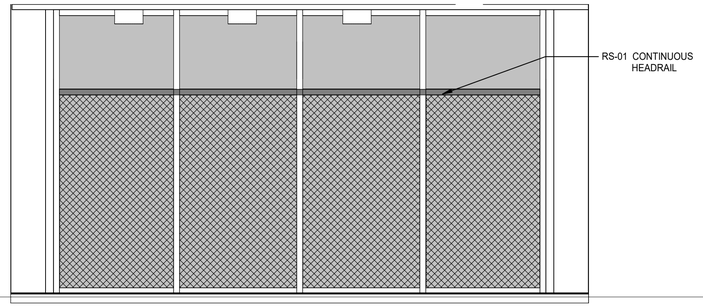
Scale: 3/8" = 1'-0"

2' 1' 0' 2' 4'



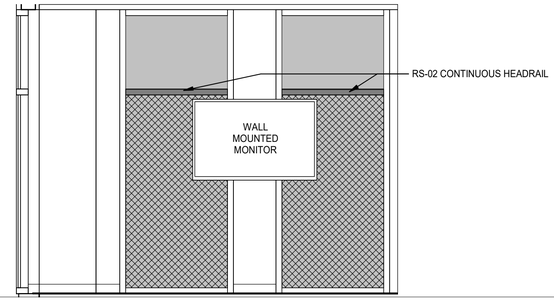
3 A405 **CONFERENCE ROLLER SHADES WEST**

Scale: 3/8" = 1'-0"



4 A405 **CONFERENCE ROLLER SHADES NORTH**

Scale: 3/8" = 1'-0"



5 A405 **CONFERENCE ROLLER SHADES EAST**

Scale: 3/8" = 1'-0"

KEYNOTES

08 14 16.03	FLUSH SOLID CORE WOOD DOOR WITH FULL LITE WITH SCHEDULED FINISH; REFER TO DOOR SCHEDULE
22 47 13.01	SPECIFIED DRINKING FOUNTAIN WITH BOTTLE FILLER

LEGEND

REF	REFRIGERATOR (N.I.C.); COORDINATE CASEWORK DIMENSIONS WIT SELECTED EQUIPMENT
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PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

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INTERIOR ELEVATIONS

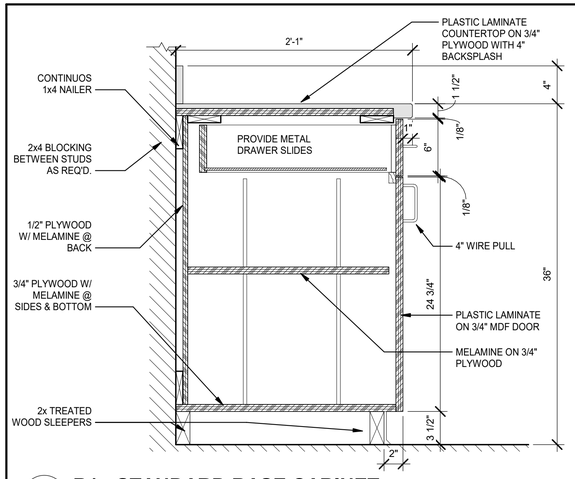
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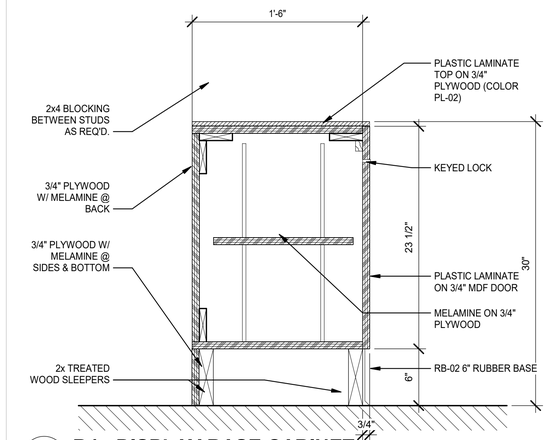
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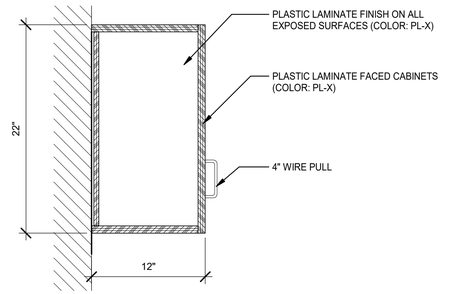
1 A411 **B1 - STANDARD BASE CABINET**

Scale: 1 1/2" = 1'-0"



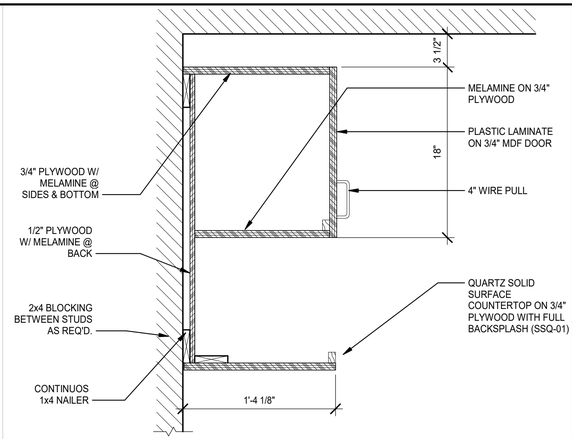
4 A411 **B4 - DISPLAY BASE CABINET**

Scale: 1 1/2" = 1'-0"



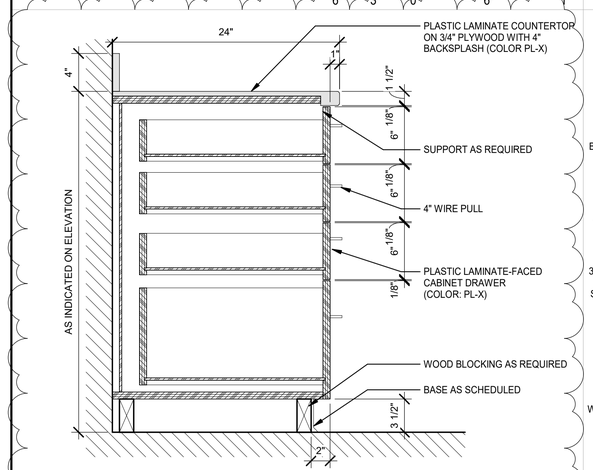
7 A411 **W2 - WALL-HUNG CABINET**

Scale: 1 1/2" = 1'-0"



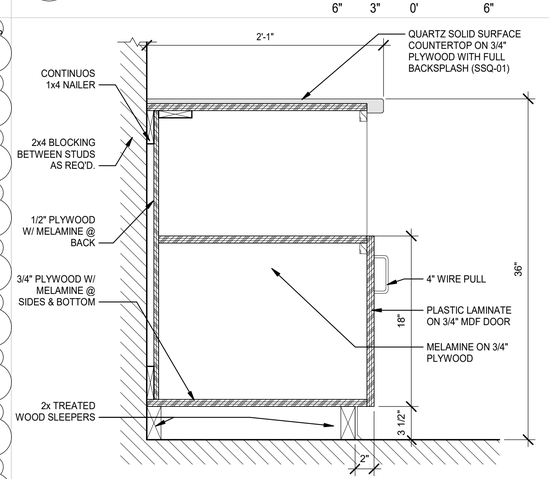
10 A411 **W4 - WALL-HUNG MICROWAVE CABINET**

Scale: 1 1/2" = 1'-0"



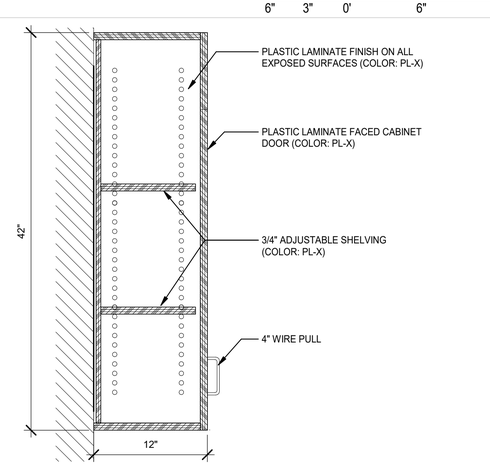
2 A411 **B2 - BASE CABINET - (4) DRAWERS**

Scale: 1 1/2" = 1'-0"



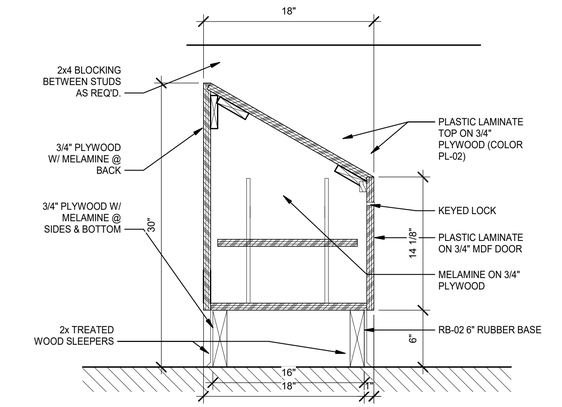
5 A411 **B5 - STANDARD BASE CABINET**

Scale: 1 1/2" = 1'-0"



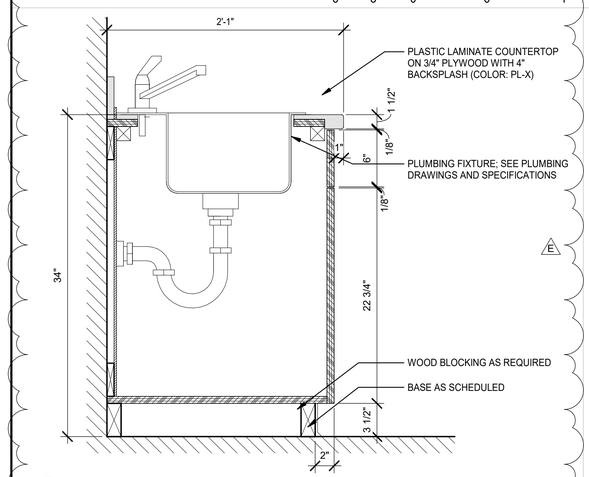
8 A411 **W1 - WALL-HUNG CABINET**

Scale: 1 1/2" = 1'-0"



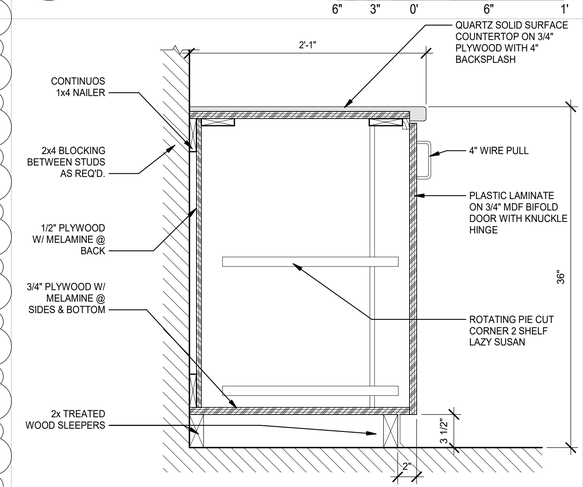
11 A411 **B7 - DISPLAY BASE CABINET**

Scale: 1 1/2" = 1'-0"



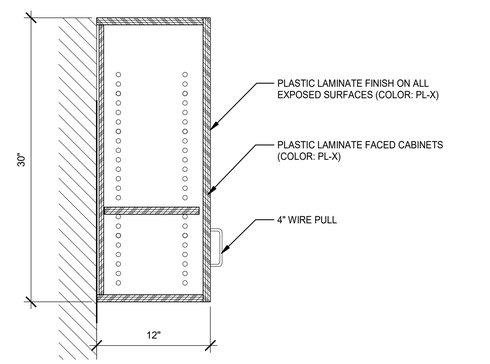
3 A411 **B3 - SINK BASE CABINET**

Scale: 1 1/2" = 1'-0"



6 A411 **B6 - CORNER BASE CABINET**

Scale: 1 1/2" = 1'-0"



9 A411 **W3 - WALL-HUNG CABINET**

Scale: 1 1/2" = 1'-0"

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SHEET TITLE

CASEWORK DETAILS

SHEET NUMBER

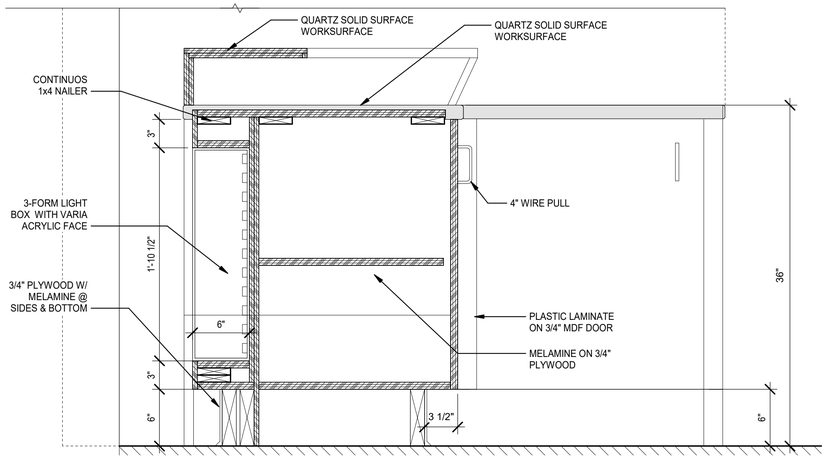
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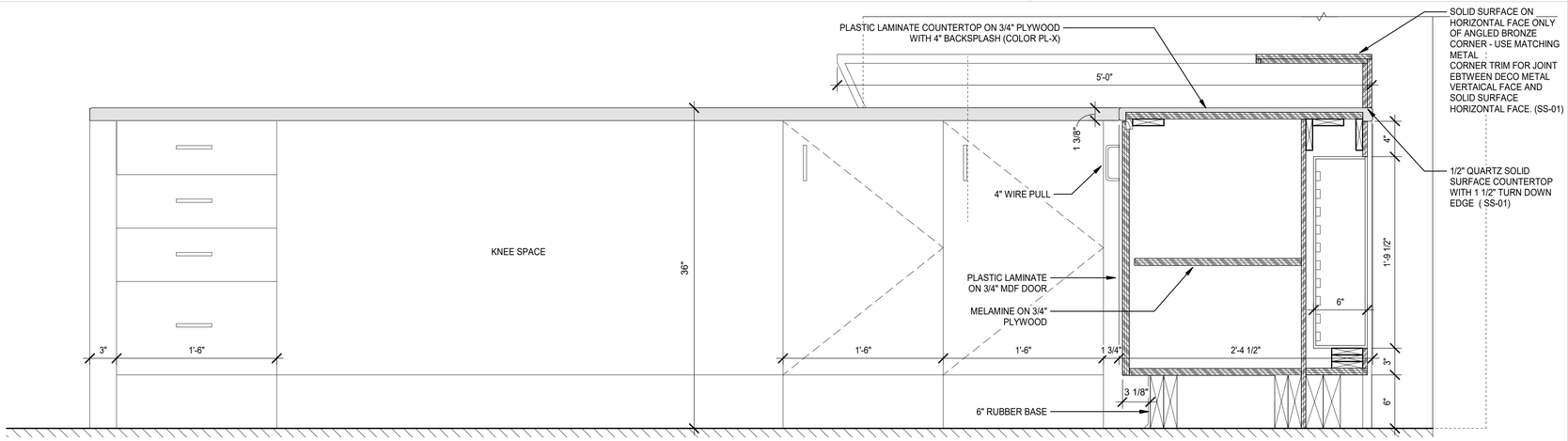
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1 A412 **C1 - RECEPTION BASE CABINET SECTION**

Scale: 1 1/2" = 1'-0"

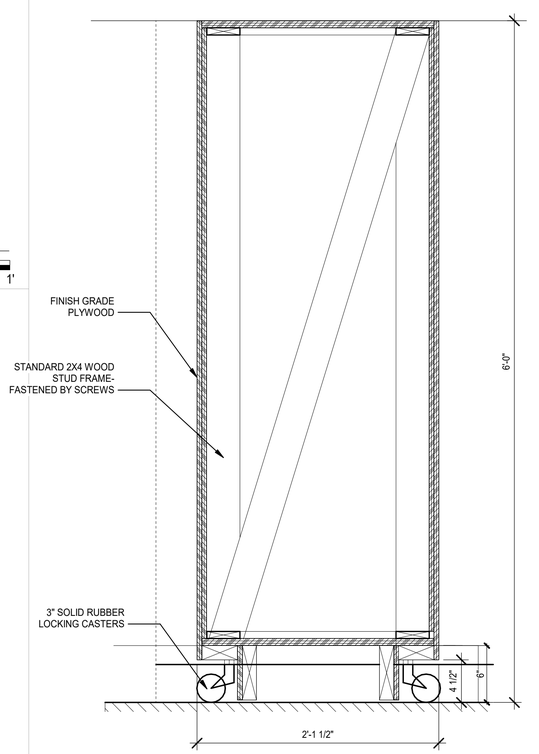
6" 3" 0" 6" 1'



2 A412 **C2 - RECEPTION DESK BASE CABINET SECTION**

Scale: 1 1/2" = 1'-0"

6" 3" 0" 6" 1'



3 A412 **M1 - MUSEUM MOVABLE DISPLAY WALL SECTION**

Scale: 1 1/2" = 1'-0"

6" 3" 0" 6" 1'

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REVISIONS DESCRIPTION

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DRAWN BY: QG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE
CASEWORK DETAILS

SHEET NUMBER
A412

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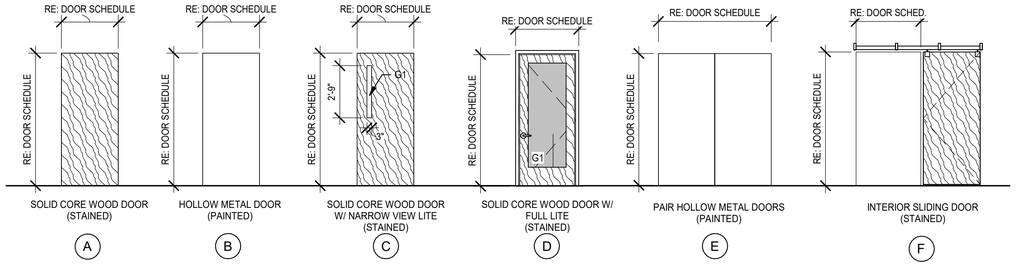
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DOOR SCHEDULE

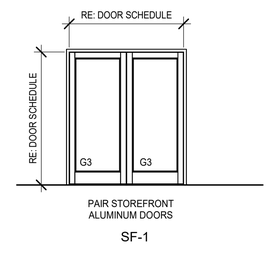
MARK	ROOM NAME	DOORS							FRAME						FIRE RATING	HARDWARE	REMARKS
		SIZE										DETAIL					
		WIDTH	HEIGHT	ELEV	MATERIAL	FINISH	UNDERCUT	GLAZING	TYPE	MATERIAL	FINISH	HEAD	JAMB	SILL		SET NO.	
101A	LOBBY	6' - 0"	7' - 0"	SF-1	ALUM	ANODIZED	-	G3	C-1	AL	ANODIZED	4 / A621	5 / A621	6 / A621			
101B	LOBBY	6' - 0"	7' - 0"	SF-1	ALUM	ANODIZED	-	G3	C-2	AL	ANODIZED	4 / A621	5 / A621	6 / A621			
101C	LOBBY	6' - 0"	7' - 0"	SF-1	ALUM	ANODIZED	-	G3	C-2	AL	ANODIZED	4 / A621	5 / A621	6 / A621			
101D	LOBBY	6' - 0"	7' - 0"	SF-1	ALUM	ANODIZED	-	G3	C-2	AL	ANODIZED	4 / A621	5 / A621	6 / A621			
105	MECH	5' - 0"	7' - 0"	E	HM	PAINT	-	-	HM-2	HM	PAINT	9 / A611	5 / A611	6 / A611			
107	STOR	3' - 0"	7' - 0"	F	SCWD	STAINED	1/2"	-	CUSTOM	WD	PAINT	7 / A611	8 / A611	-			
108	BREAKROOM	3' - 0"	7' - 0"	C	SCWD	STAINED	1/2"	G1	HM-1	HM	PAINT	1 / A611	2 / A611	9 / A611			
109A	CONFERENCE	3' - 0"	7' - 0"	SF-1	ALUM	ANODIZED	-	G3	C-3	AL	ANODIZED	4 / A621	5 / A621	6 / A621			
109B	CONFERENCE	3' - 0"	7' - 0"	C	SCWD	STAINED	1/2"	G1	HM-1	HM	PAINT	1 / A611	2 / A611	11 / A611			
111	MANAGER OFFICE	3' - 0"	7' - 0"	D	SCWD	STAINED WOOD	1/2"	G1	HM-1	HM	PAINT	1 / A611	2 / A611	10 / A611	-		
112	STOR	3' - 0"	7' - 0"	A	SCWD	STAINED WOOD	1/2"	-	HM-1	HM	PAINT	1 / A611	2 / A611	12 / A611			
113	IT	3' - 0"	7' - 0"	A	SCWD	STAINED WOOD	1/2"	-	HM-1	HM	PAINT	1 / A611	2 / A611	12 / A611			
114	MEN'S RR	3' - 0"	7' - 0"	A	SCWD	STAINED WOOD	1/2"	-	HM-1	HM	PAINT	1 / A611	2 / A611	12 / A611			
115	WOMEN'S RR	3' - 0"	7' - 0"	A	SCWD	STAINED WOOD	1/2"	-	HM-1	HM	PAINT	1 / A611	2 / A611	12 / A611			
116	RR	3' - 0"	7' - 0"	B	HM	PAINT	-	-	HM-2	HM	PAINT	4 / A611	5 / A611	6 / A611			
117	RR	3' - 0"	7' - 0"	B	HM	PAINT	-	-	HM-2	HM	PAINT	4 / A611	5 / A611	6 / A611			
119	CHASE	2' - 6"	7' - 0"	B	HM	PAINT	-	-	HM-2	HM	PAINT	4 / A611	5 / A611	6 / A611			
120	RR	3' - 0"	7' - 0"	B	HM	PAINT	-	-	HM-2	HM	PAINT	4 / A611	5 / A611	6 / A611			
121	JAN	3' - 0"	7' - 0"	B	HM	PAINT	-	-	HM-2	HM	PAINT	4 / A611	5 / A611	6 / A611			
123	UNISEX	3' - 0"	7' - 0"	A	SCWD	STAINED WOOD	1/2"	-	HM-1	HM	PAINT	1 / A611	2 / A611	12 / A611			
124	VEST	3' - 0"	7' - 0"	F	SCWD	STAINED WOOD	1/2"	-	CUSTOM	WD	PAINT	7 / A611	8 / A611	-			



GRAPHIC DOOR SCHEDULE

SCALE: 1/4" = 1'-0"

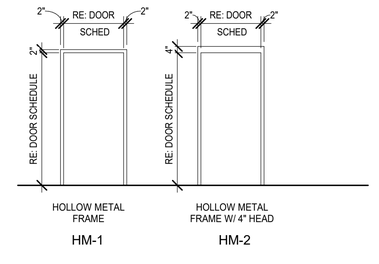
4' 2' 0' 4' 8'



GRAPHIC STOREFRONT DOOR SCHEDULE

SCALE: 1/4" = 1'-0"

4' 2' 0' 4' 8'



GRAPHIC DOOR FRAMES SCHEDULE

SCALE: 1/4" = 1'-0"

4' 2' 0' 4' 8'

ABBREVIATIONS:

AL	ALUMINUM	HM	HOLLOW METAL
AM	ANTI-MICROBIAL FINISH	HO	HOLD OPEN
AO	AUTOMATIC OPERATOR	IA	INFANT ABDUCTION
AP	ARMOR PLATE	JP	JAMB PROTECTORS
AT	ACOUSTICAL TREATMENT	KP	KICK PLATE
CH	CONTINUOUS HINGE	LL	LEAD LINED
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CL	CLOSER	MP	MOP PLATE
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DA	DOUBLE ACTING	PP	PUSH PLATE
DE	DOUBLE EGRESS	PA	PANIC HARDWARE
DO	DOOR OPERATOR	SCWD	SOLID CORE WOOD
EG	EDGE GUARD	SG	SAFETY GLASS
FRP	FIBERGLASS REINFORCED PLASTIC	SS	STAINLESS STEEL
		VL	VISION LIGHT
GL	GLASS / GLAZING	WD	WOOD
		ST	STAIN

GLAZING INDEX:

- G1 CLEAR TEMPERED GLASS, RE: SPECIFICATIONS
- G2 CLEAR LAMINATED TEMPERED GLASS, RE: SPECIFICATIONS
- G3 INSULATED LAMINATED GLASS UNITS (IMPACT RATED), RE: SPECIFICATIONS
- G4 INSULATED LAMINATED GLASS SPANDREL UNITS (IMPACT RATED), RE: SPECIFICATIONS

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7. REFER TO SPECIFICATIONS AND FINISH SCHEDULE FOR DOOR AND FRAME FINISHES.
8. UNLESS OTHERWISE NOTED, GLAZING ELEVATIONS SHOWN FROM EXTERIOR SIDE.

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SHEET TITLE
DOOR AND WINDOW SCHEDULES

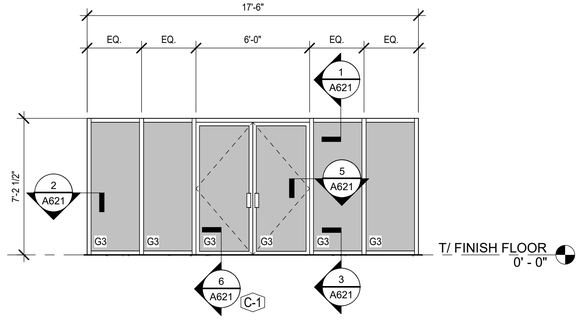
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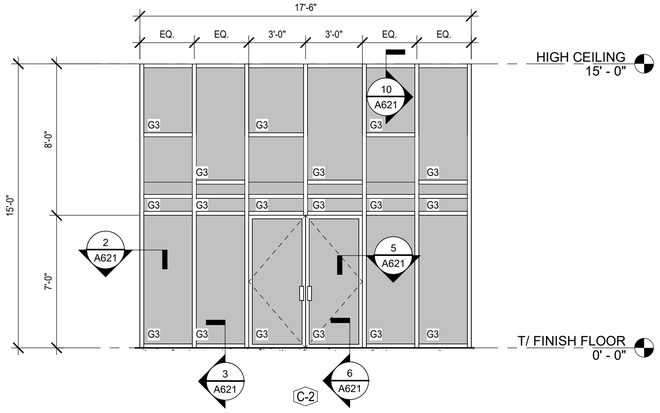
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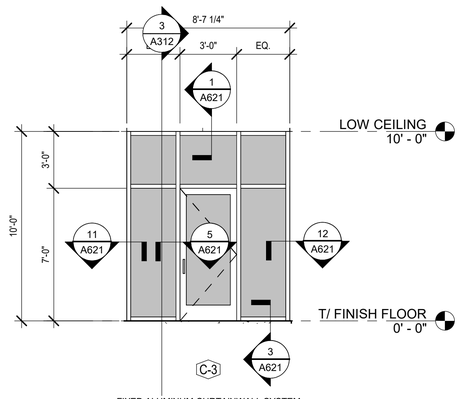
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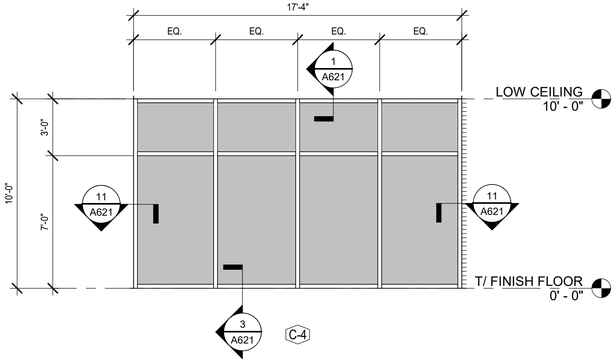
FIXED ALUMINUM CURTAINWALL SYSTEM
BASIS OF DESIGN: KAWNEER 1600 WALL SYSTEM 2



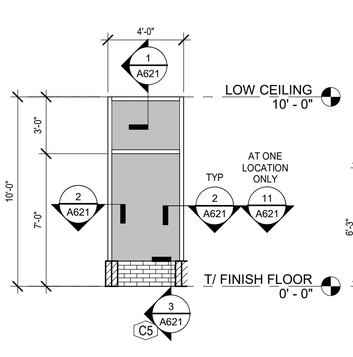
FIXED ALUMINUM CURTAINWALL SYSTEM
BASIS OF DESIGN: KAWNEER 1600 WALL SYSTEM 2



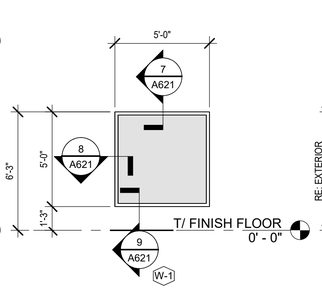
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BASIS OF DESIGN: KAWNEER 1600 WALL SYSTEM 2



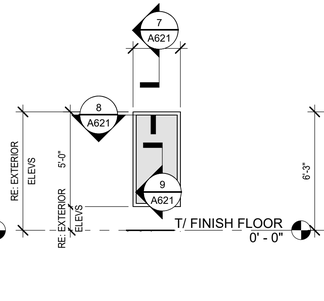
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BASIS OF DESIGN: KAWNEER 1600 WALL SYSTEM 2



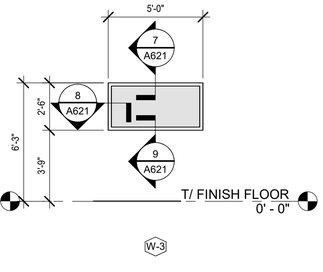
FIXED ALUMINUM CURTAINWALL SYSTEM
BASIS OF DESIGN: KAWNEER 1600 WALL SYSTEM 2



FIXED ALUMINUM STOREFRONT SYSTEM
BASIS OF DESIGN: KAWNEER IR500



FIXED ALUMINUM STOREFRONT SYSTEM
BASIS OF DESIGN: KAWNEER IR500

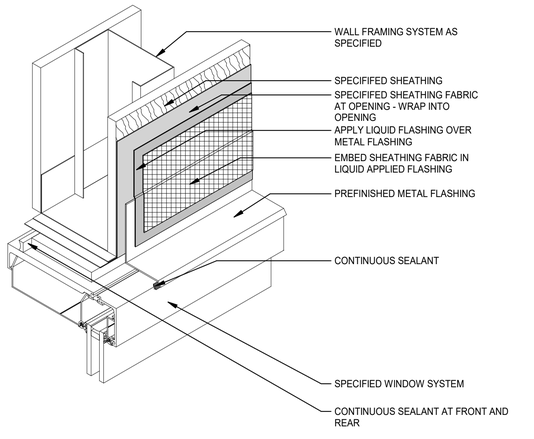


FIXED ALUMINUM STOREFRONT SYSTEM
BASIS OF DESIGN: KAWNEER IR500

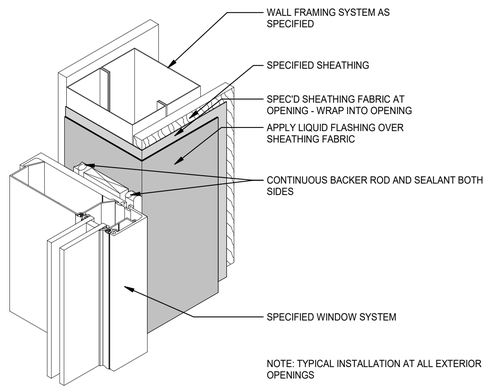
GRAPHIC CURTAINWALL / STOREFRONT SCHEDULE

SCALE: 1/4" = 1'-0"

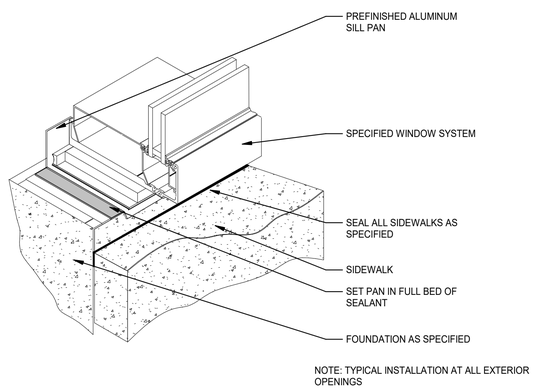
4' 2' 0' 4' 8'



1 A602 TYPICAL WINDOW HEAD
NOT TO SCALE



2 A602 TYPICAL WINDOW JAMB
NOT TO SCALE



3 A602 TYPICAL WINDOW SILL
NOT TO SCALE

ABBREVIATIONS:

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AM	ANTI-MICROBIAL FINISH	HO	HOLD OPEN
AO	AUTOMATIC OPERATOR	IA	INFANT ABDUCTION
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STATE OF ALABAMA
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SHEET TITLE
GRAPHIC STOREFRONT / CURTAINWALL SCHEDULE

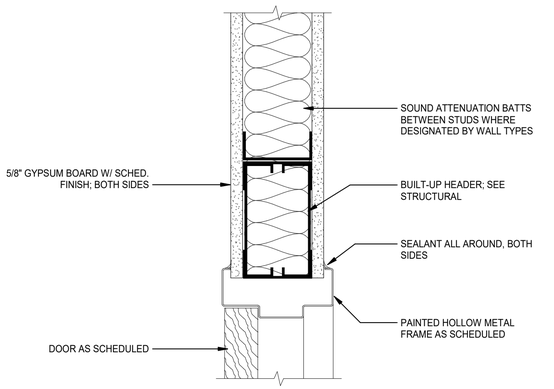
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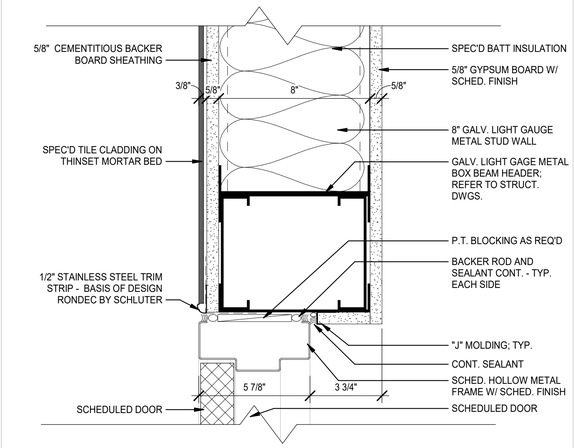
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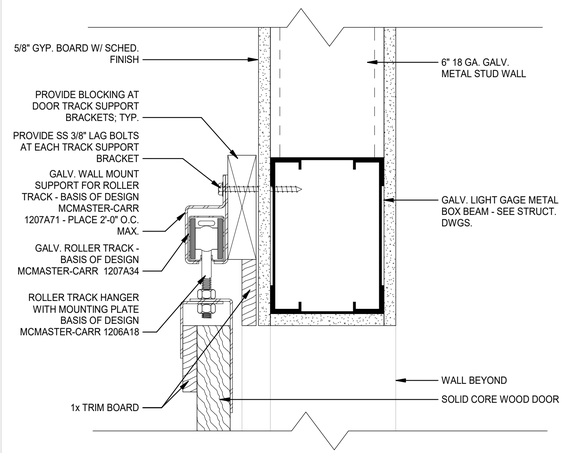
1 A611 TYPICAL HEAD AT INTERIOR STUD WALLS

Scale: 3" = 1'-0"



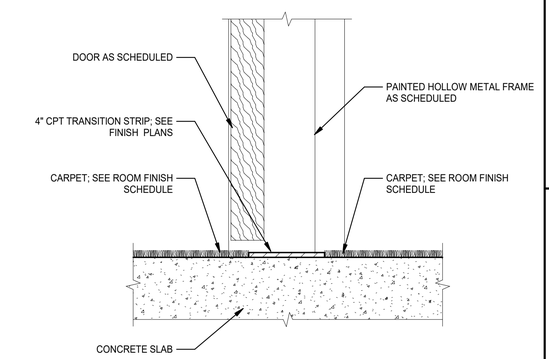
4 A611 TYPICAL EXTERIOR DOOR HEAD

Scale: 3" = 1'-0"



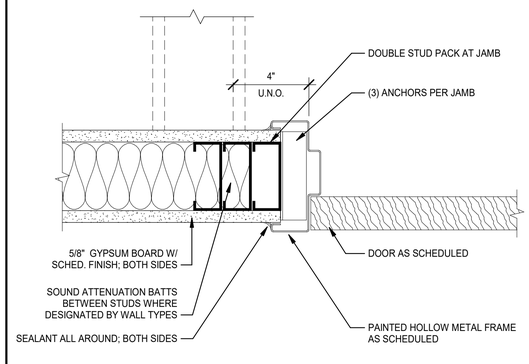
7 A611 TYPICAL SLIDING DOOR HEAD DETAIL

Scale: 3" = 1'-0"



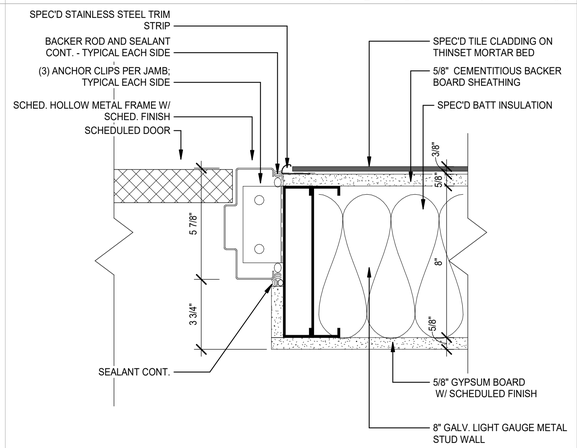
10 A611 THRESHOLD - CPT TO CPT

Scale: 3" = 1'-0"



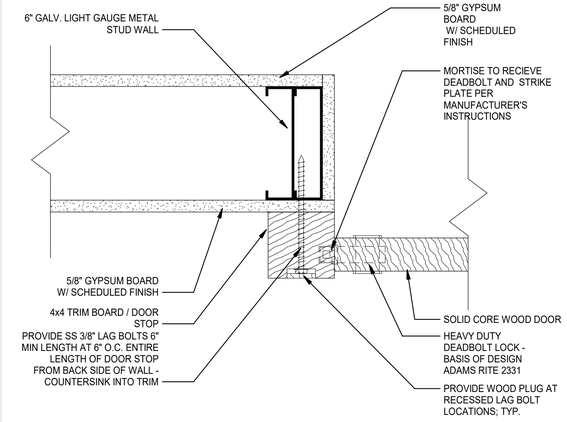
2 A611 TYPICAL JAMB AT INTERIOR STUD WALLS

Scale: 3" = 1'-0"



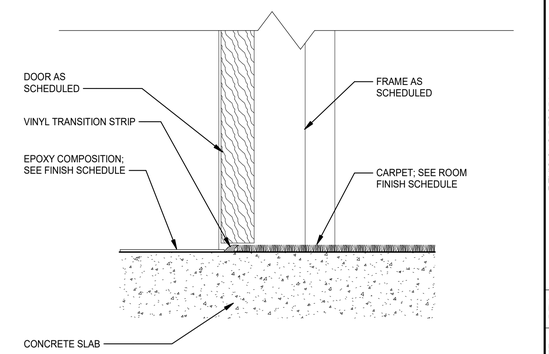
5 A611 TYPICAL EXTERIOR DOOR JAMB

Scale: 3" = 1'-0"



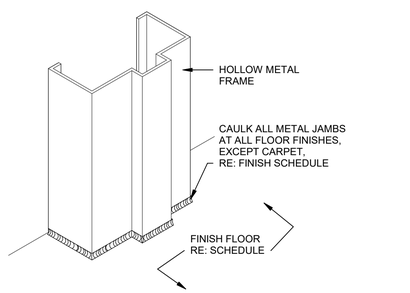
8 A611 TYPICAL SLIDING DOOR JAMB DETAIL

Scale: 3" = 1'-0"



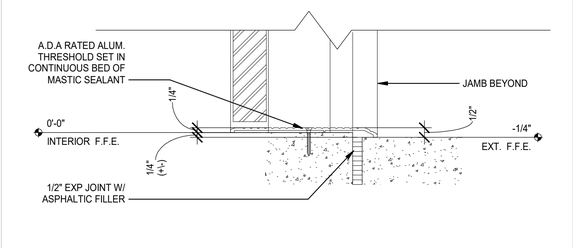
11 A611 THRESHOLD DETAIL - EPOXY TO CARPET

Scale: 3" = 1'-0"



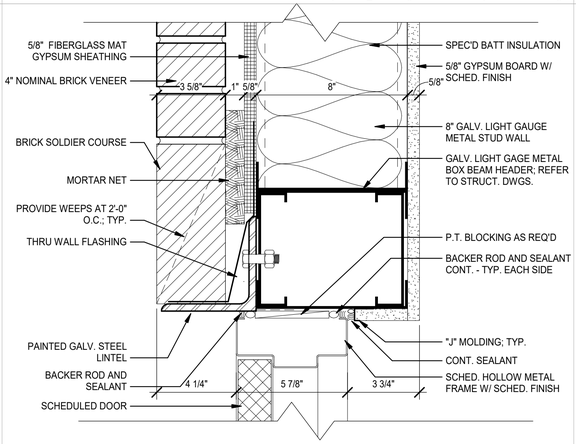
3 A611 TYPICAL JAMB AT FLOOR DETAIL

Scale: 3" = 1'-0"



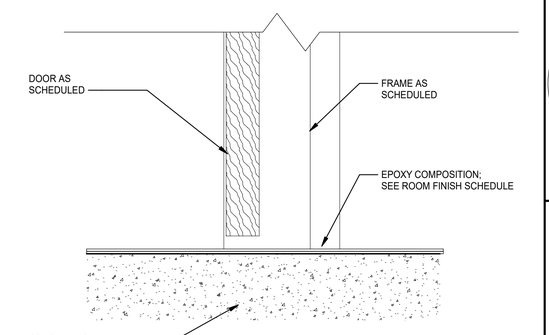
6 A611 TYPICAL EXTERIOR DOOR SILL

Scale: 3" = 1'-0"



9 A611 EXTERIOR DOOR HEAD AT BRICK

Scale: 3" = 1'-0"



12 A611 NO THRESHOLD DETAIL

Scale: 3" = 1'-0"

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DRAWN BY: QG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P. MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE

DOOR DETAILS

SHEET NUMBER.

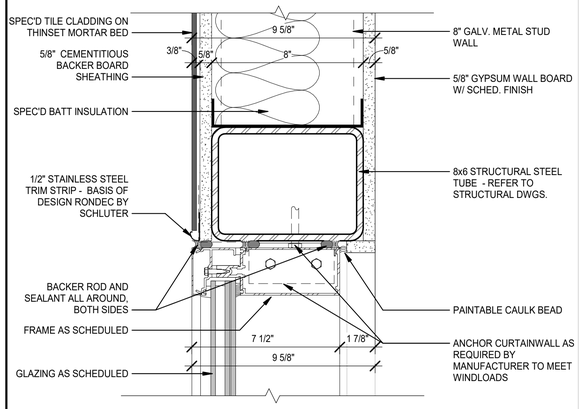
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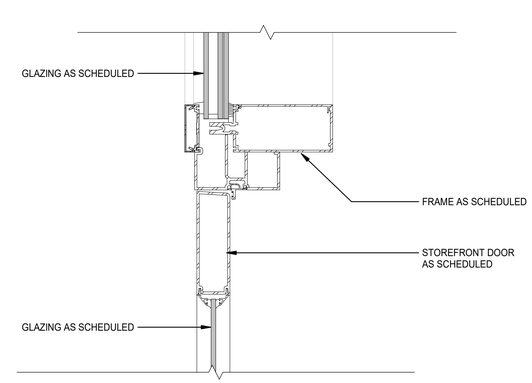
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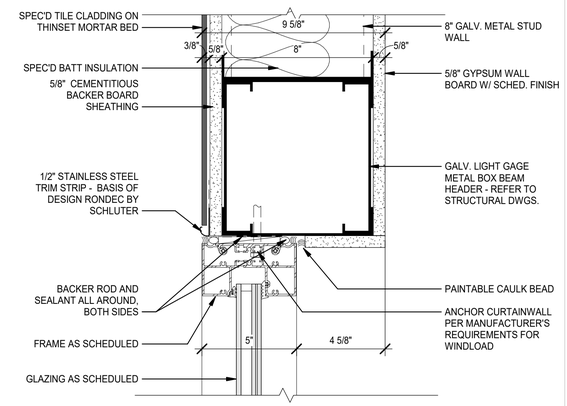
1 A621 TYPICAL CURTAIN WALL HEAD

Scale: 3" = 1'-0"



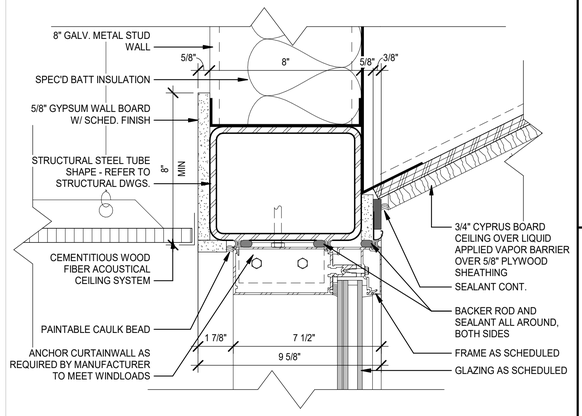
4 A621 CURTAIN WALL HEAD AT STOREFRONT DOOR

Scale: 3" = 1'-0"



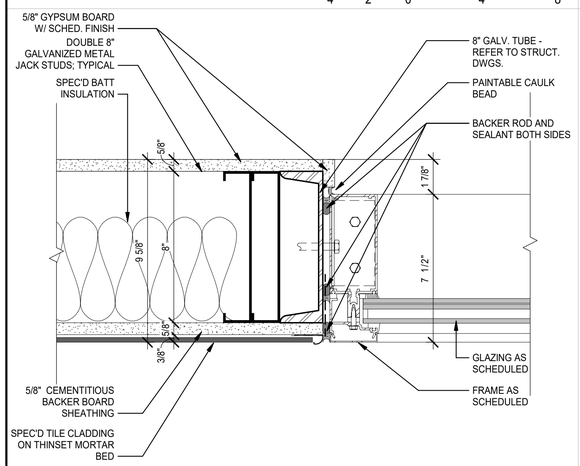
7 A621 TYPICAL WINDOW HEAD

Scale: 3" = 1'-0"



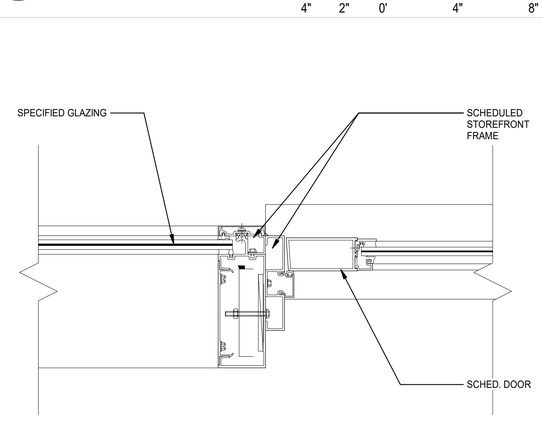
10 A621 WINDOW HEAD AT CURTAINWALL @ NORTH SIDE

Scale: 3" = 1'-0"



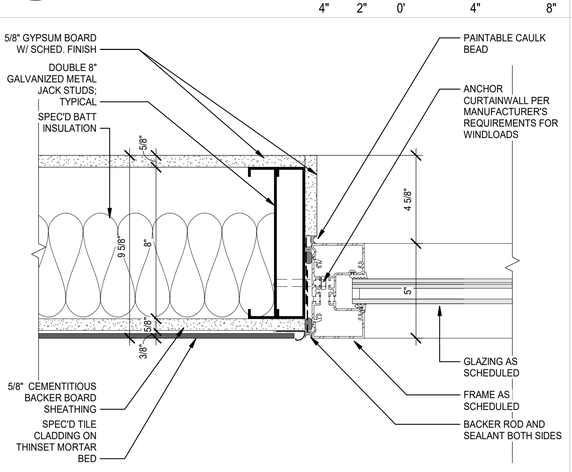
2 A621 TYPICAL CURTAIN WALL JAMB

Scale: 3" = 1'-0"



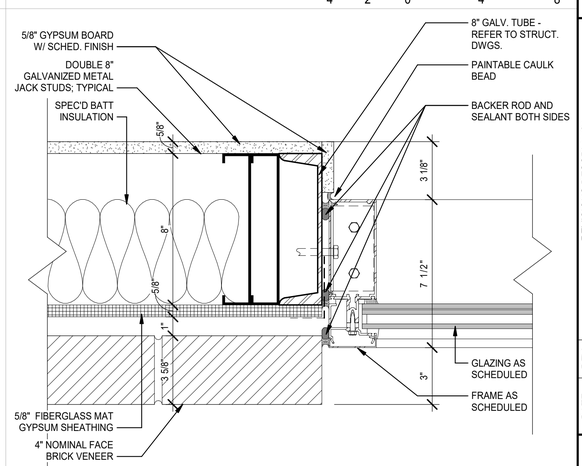
5 A621 STOREFRONT DOOR JAMB AT MULION

Scale: 3" = 1'-0"



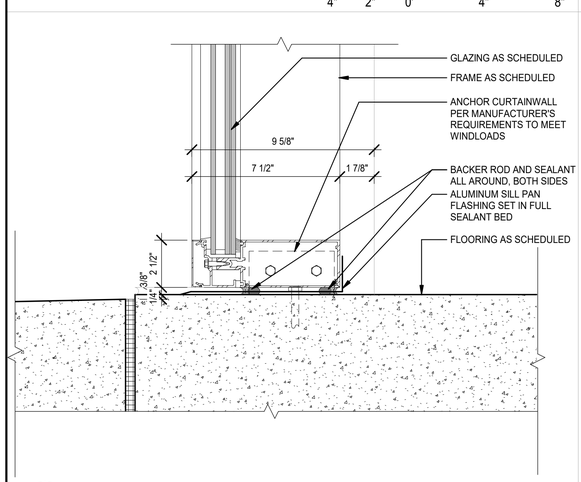
8 A621 TYPICAL WINDOW JAMB

Scale: 3" = 1'-0"



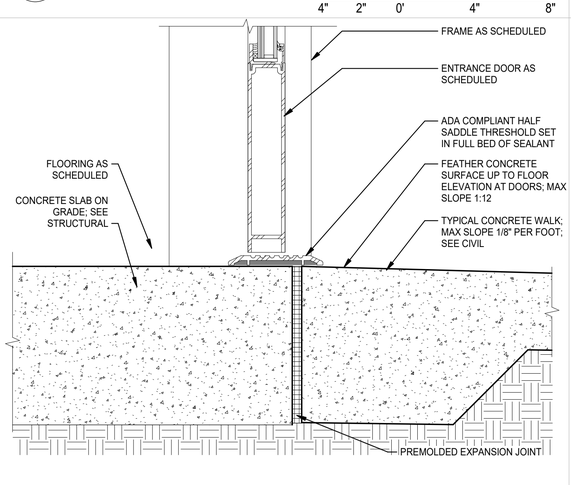
11 A621 CURTAIN WALL JAMB @ BRICK

Scale: 3" = 1'-0"



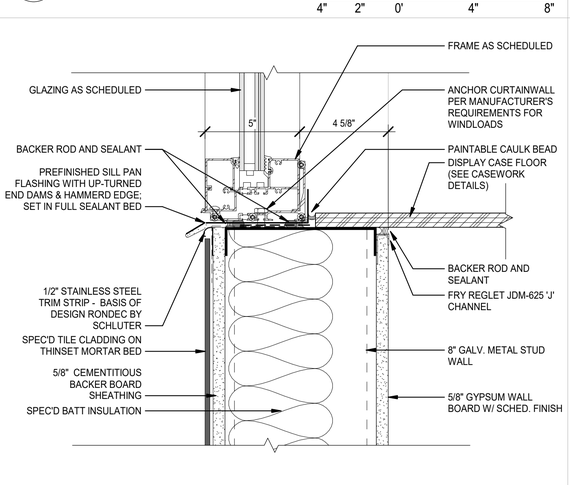
3 A621 TYPICAL CURTAIN WALL SILL

Scale: 3" = 1'-0"



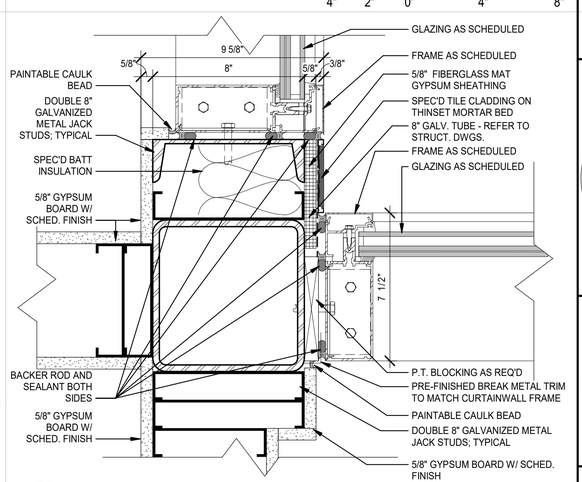
6 A621 ENTRANCE THRESHOLD AT CONCRETE WALK

Scale: 3" = 1'-0"



9 A621 TYPICAL WINDOW SILL

Scale: 3" = 1'-0"



12 A621 CURTAIN WALL JAMB @ CONF. ROOM

Scale: 3" = 1'-0"

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CHECKED BY:	C. Echols
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M.M.A. PROJECT NUMBER:	502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE

STOREFRONT AND CURTAINWALL DETAILS

SHEET NUMBER

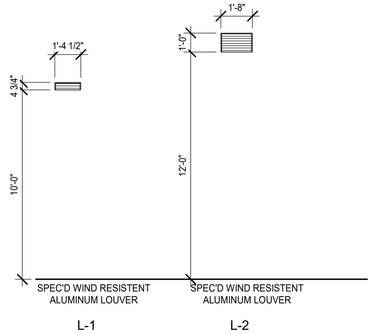
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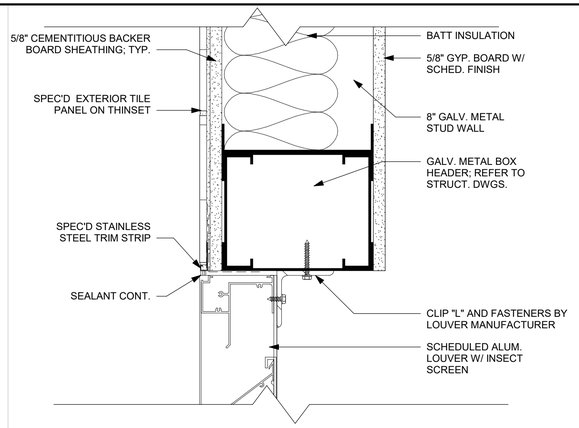


NOTE:
VERIFY LOUVER SIZES AND LOCATIONS WITH MECHANICAL DRAWINGS. NOTFY ARCHITECT IN WRITING OF ANY DESCREPENCIES OR CONFLICTS BEFORE PURCHASING AND INSTALLING.

GRAPHIC LOUVER SCHEDULE

SCALE: 1/4" = 1'-0"

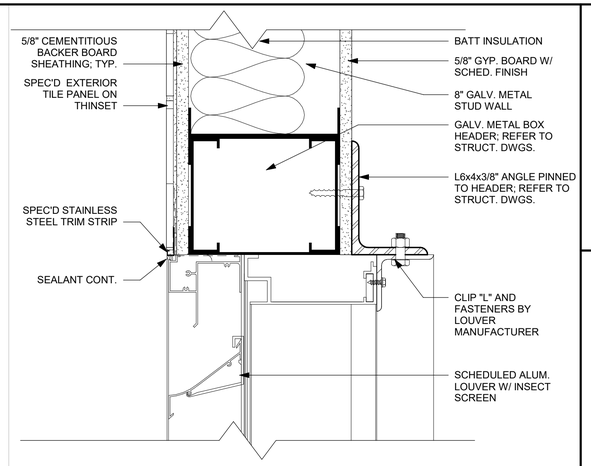
4' 2' 0' 4' 8'



1 A631 **LOUVER TYPE L1 HEAD DETAIL**

Scale: 3" = 1'-0"

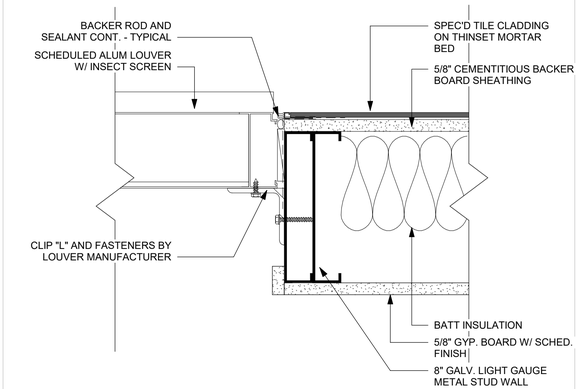
4" 2" 0' 4" 8"



4 A631 **LOUVER TYPE L2 HEAD DETAIL**

Scale: 3" = 1'-0"

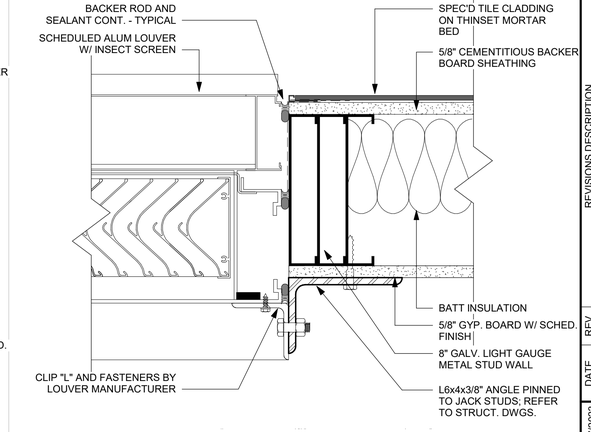
4" 2" 0' 4" 8"



2 A631 **LOUVER TYPE L1 JAMB DETAIL**

Scale: 3" = 1'-0"

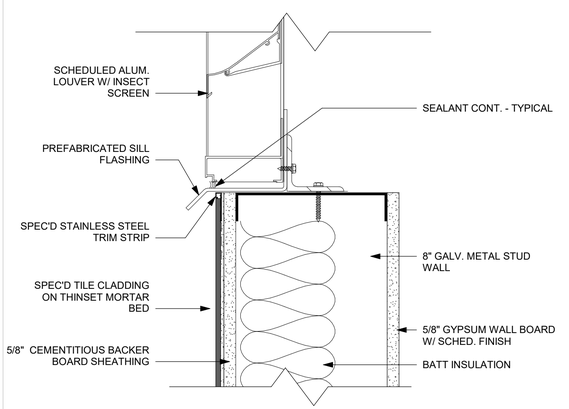
4" 2" 0' 4" 8"



5 A631 **LOUVER TYPE L2 JAMB DETAIL**

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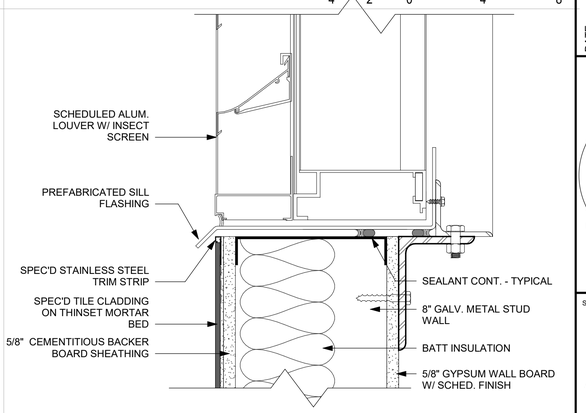
4" 2" 0' 4" 8"



3 A631 **LOUVER TYPE L1 SILL**

Scale: 3" = 1'-0"

4" 2" 0' 4" 8"



6 A631 **LOUVER TYPE L2 SILL**

Scale: 3" = 1'-0"

4" 2" 0' 4" 8"

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DRAWN BY: QG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE

LOUVER SCHEDULE AND DETAILS

SHEET NUMBER.

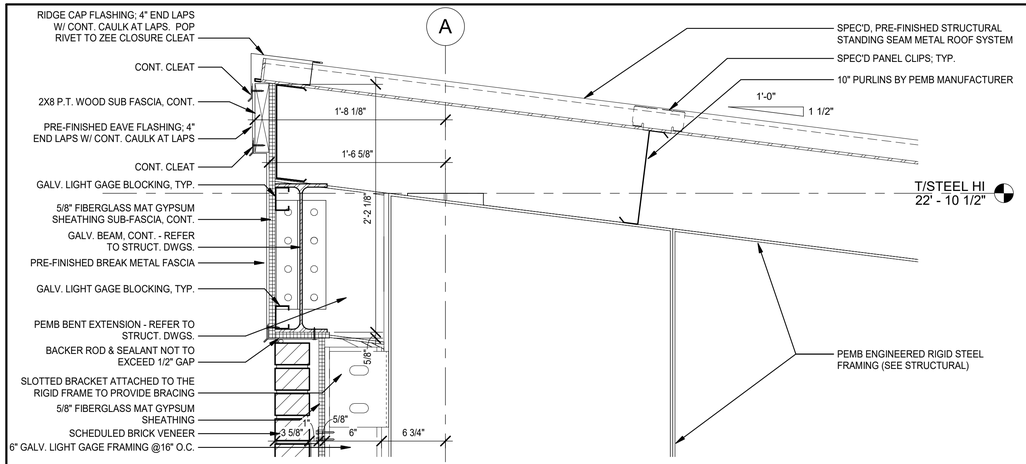
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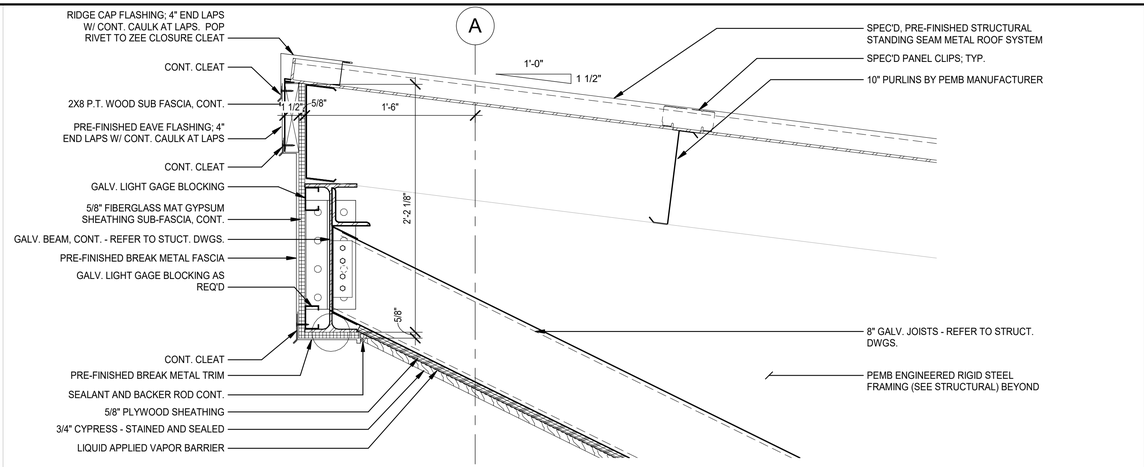
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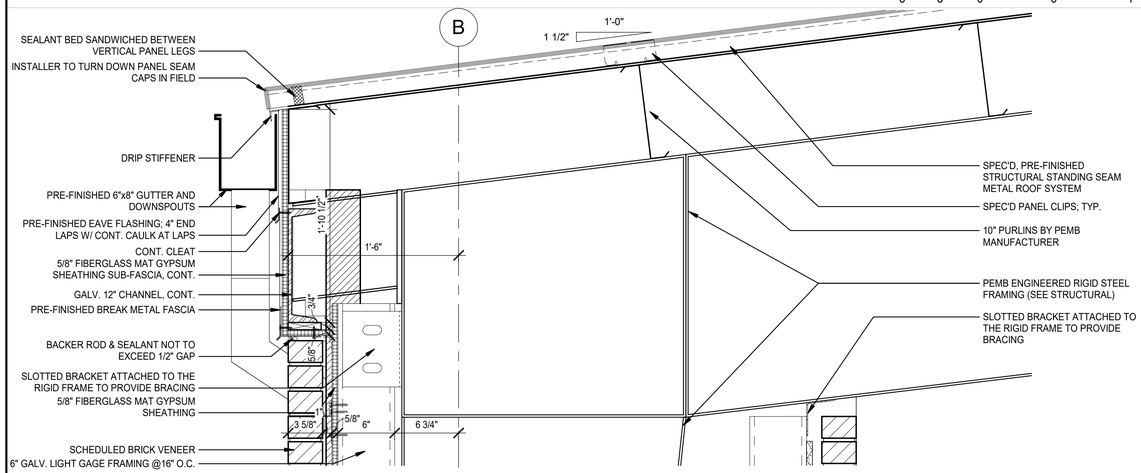
1 A701 UPPER ROOF EAVE DETAIL AT COLUMNS

Scale: 1 1/2" = 1'-0"



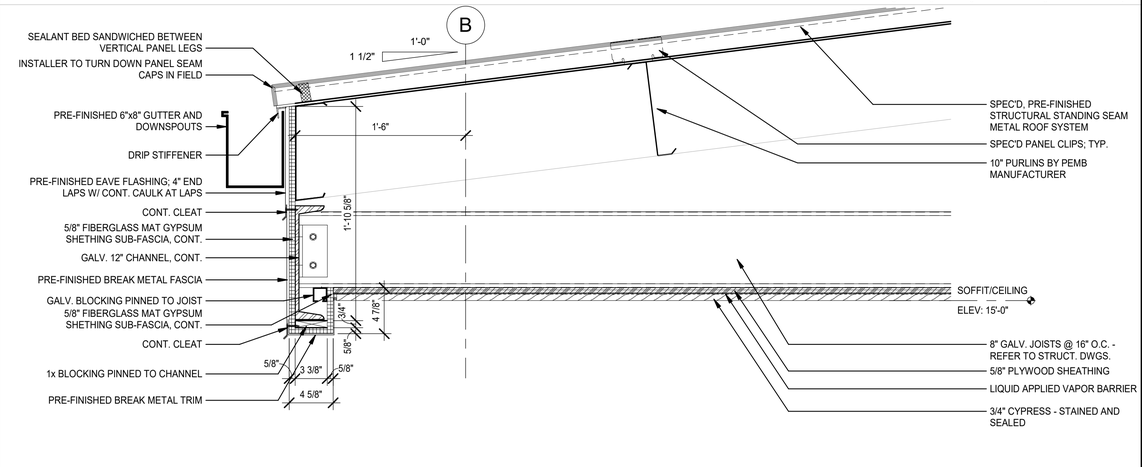
2 A701 TYPICAL UPPER ROOF EAVE DETAIL

Scale: 1 1/2" = 1'-0"



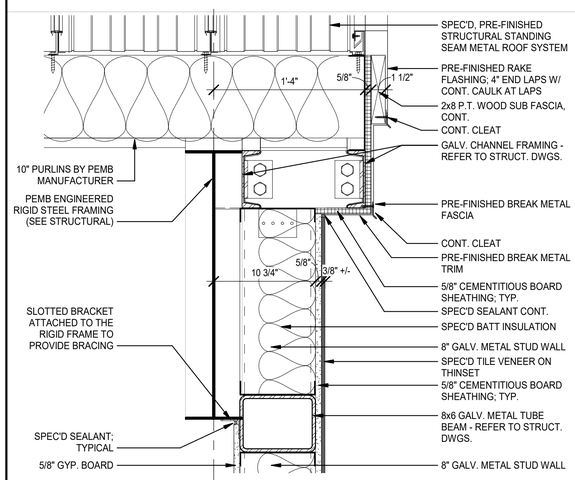
3 A701 LOWER ROOF EAVE DETAIL AT COLUMNS

Scale: 1 1/2" = 1'-0"



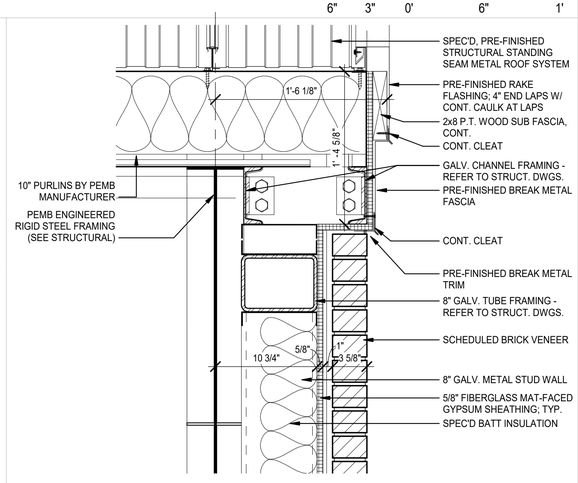
4 A701 TYPICAL LOWER ROOF EAVE DETAIL

Scale: 1 1/2" = 1'-0"



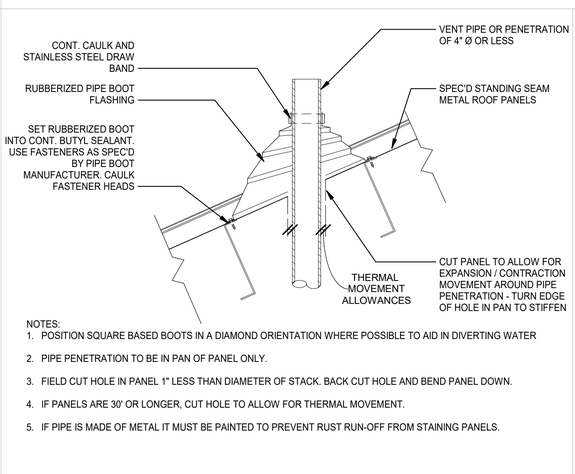
5 A701 TYPICAL RAKE DETAIL AT TILE WALL

Scale: 1 1/2" = 1'-0"



6 A701 TYPICAL RAKE DETAIL AT BRICK VENEER

Scale: 1 1/2" = 1'-0"



NOTES:

1. POSITION SQUARE BASED BOOTS IN A DIAMOND ORIENTATION WHERE POSSIBLE TO AID IN DIVERTING WATER
2. PIPE PENETRATION TO BE IN PAN OF PANEL ONLY.
3. FIELD CUT HOLE IN PANEL 1" LESS THAN DIAMETER OF STACK. BACK CUT HOLE AND BEND PANEL DOWN.
4. IF PANELS ARE 30' OR LONGER, CUT HOLE TO ALLOW FOR THERMAL MOVEMENT.
5. IF PIPE IS MADE OF METAL IT MUST BE PAINTED TO PREVENT RUST RUN-OFF FROM STAINING PANELS.

7 A701 TYPICAL VENT THROUGH ROOF DETAIL

Scale: 1 1/2" = 1'-0"

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PROJECT ARCHITECT:	Andrew Marasca
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STATE OF ALABAMA
ANDREW P. MARASCA
6996
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SHEET TITLE
ROOF DETAILS

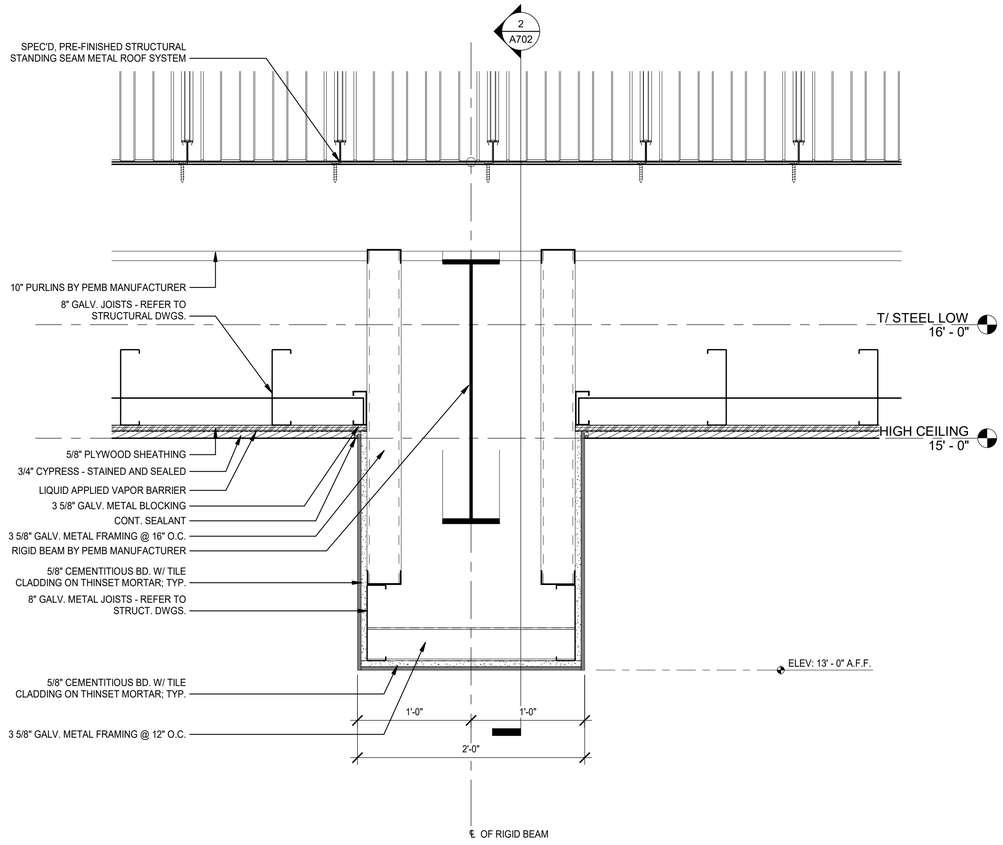
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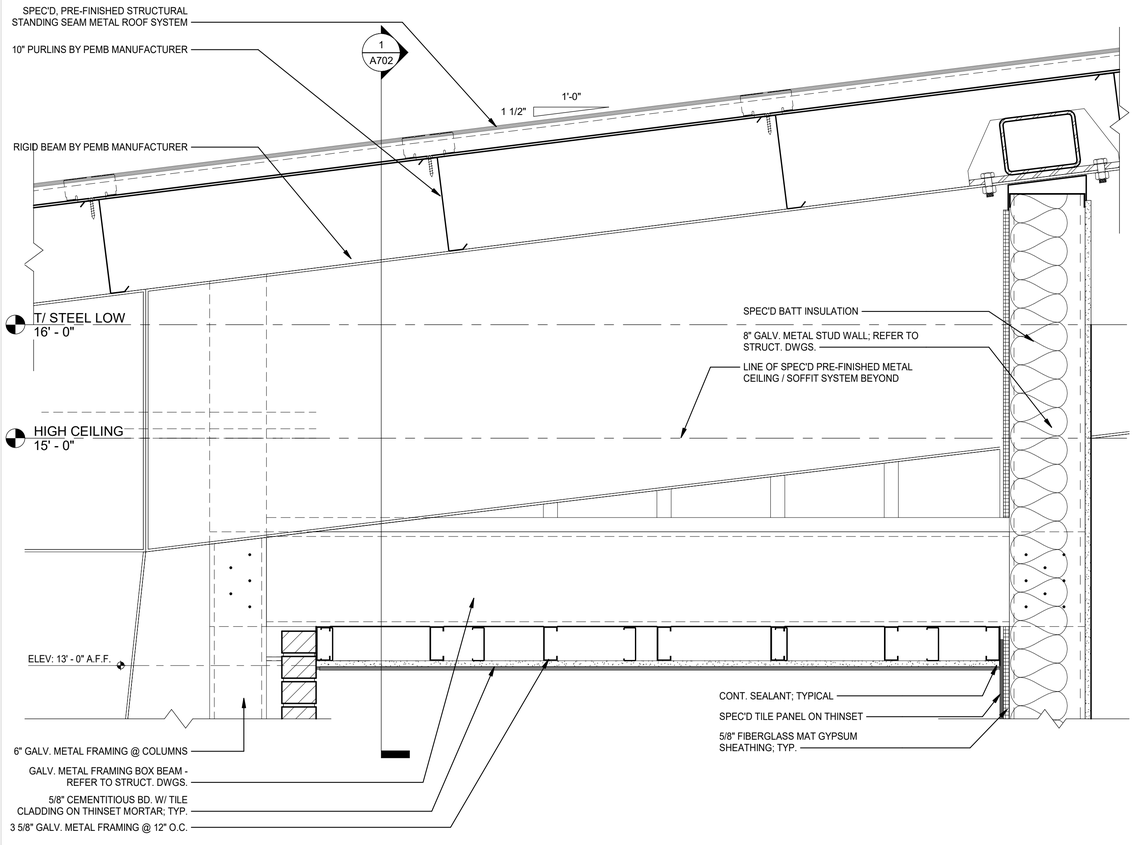
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1 A702 RIGID BEAM FURR DOWN CROSS SECTION

Scale: 1 1/2" = 1'-0"

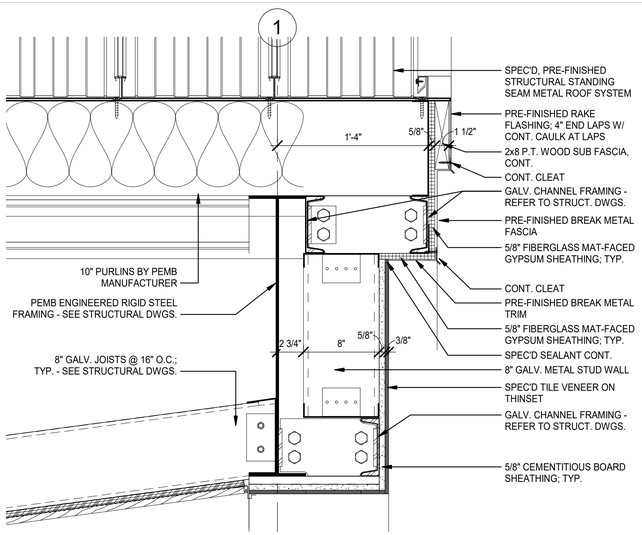
6" 3" 0' 6" 1'



2 A702 RIGID BEAM FURR DOWN LONG SECTION

Scale: 1 1/2" = 1'-0"

6" 3" 0' 6" 1'



3 A702 RAKE DETAIL AT WEST END OF BUILDING

Scale: 1 1/2" = 1'-0"

6" 3" 0' 6" 1'

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AFRICATOWN WELCOME CENTER

City of Mobile

1959 Bay Bridge Road Cutoff
Mobile, AL. 36610

REV	DATE	REVISIONS DESCRIPTION
A	07/17/2023	30% Submission
B	10/02/2023	90% Submission
C	10/27/2023	100% Submission

DATE: 10/27/2023
DESIGNED BY: A. Marasca
DRAWN BY: QG, AB, JE
CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE

ROOF DETAILS

SHEET NUMBER.

A702

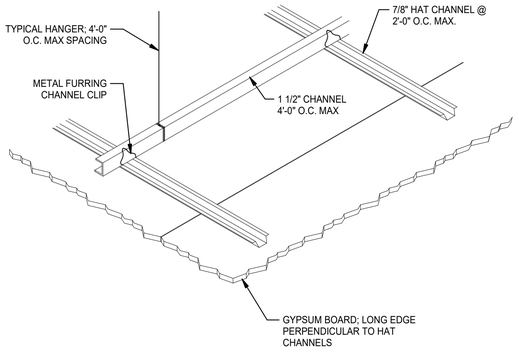
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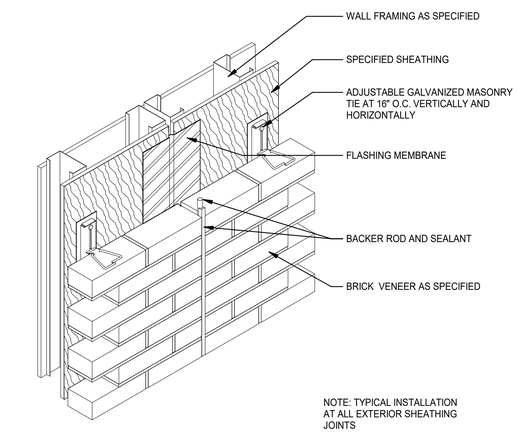
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1 A801 INTERIOR SUSPENDED GYPSUM CEILING

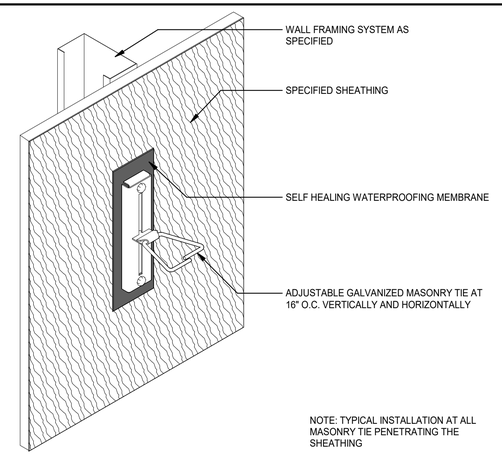
Scale: 1 1/2" = 1'-0"

6" 3" 0' 6" 1'



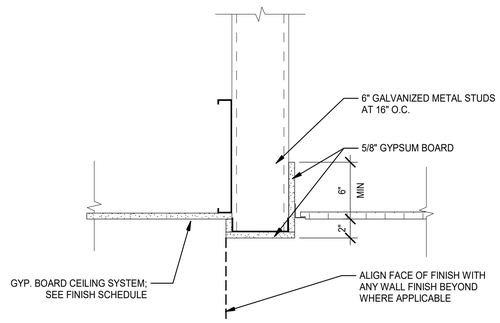
2 A801 TYP. BRICK EXPANSION JOINT

NOT TO SCALE



3 A801 TYP. BRICK ANCHOR ATTACH

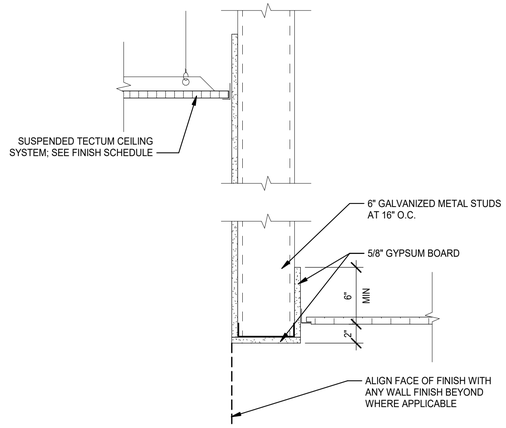
NOT TO SCALE



4 A801 GYPSUM BOARD HEADER DETAIL

Scale: 1 1/2" = 1'-0"

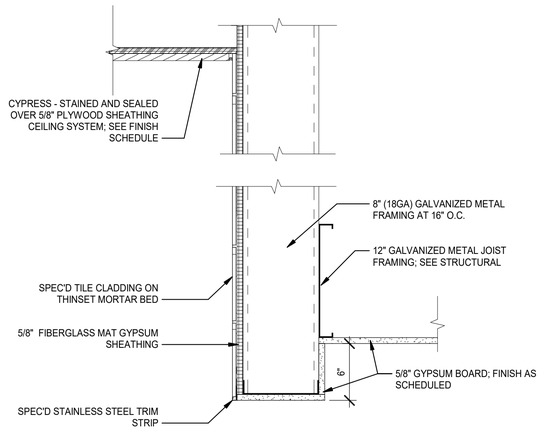
6" 3" 0' 6" 1'



5 A801 GYPSUM BOARD HEADER DETAIL

Scale: 1 1/2" = 1'-0"

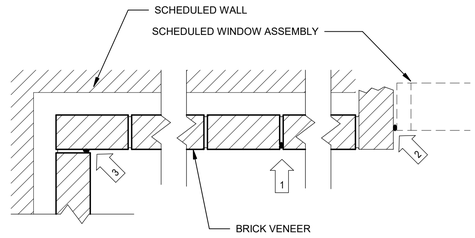
6" 3" 0' 6" 1'



6 A801 BULKHEAD DETAIL

Scale: 1 1/2" = 1'-0"

6" 3" 0' 6" 1'



7 A801 BRICK EXPANSION JOINT DETAIL

Scale: 1 1/2" = 1'-0"

6" 3" 0' 6" 1'

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M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE

MISC DETAILS

SHEET NUMBER

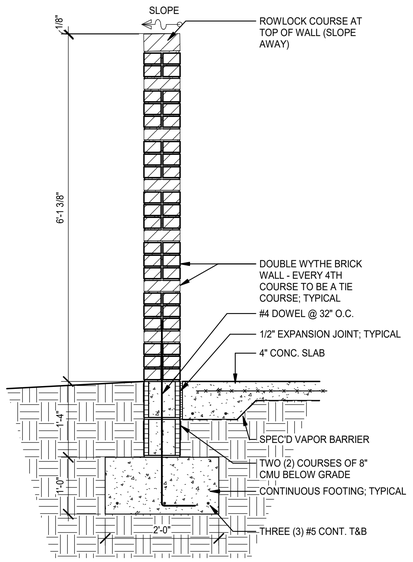
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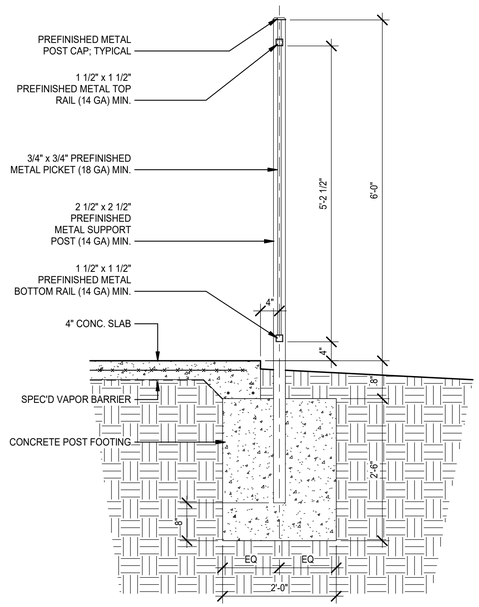
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1 A802 HVAC COURTYARD - BRICK SCREEN WALL

Scale: 3/4" = 1'-0"

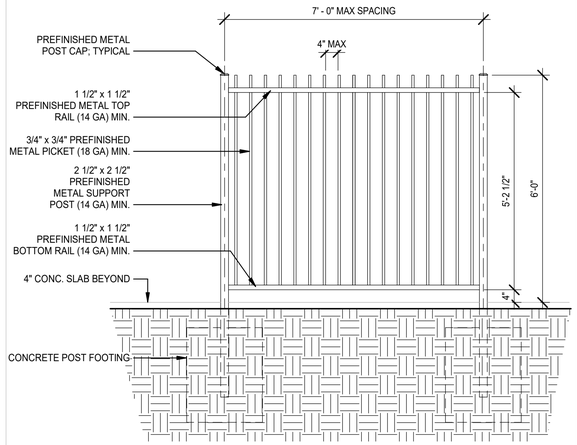
1' 6" 0' 1' 2'



2 A802 HVAC COURTYARD - DECORATIVE METAL FENCE POST DETAIL

Scale: 3/4" = 1'-0"

1' 6" 0' 1' 2'



3 A802 TYPICAL DECORATIVE FENCE ELEV.

Scale: 1/2" = 1'-0"

1' 6" 0' 1' 2'

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CHECKED BY: C. Echols
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
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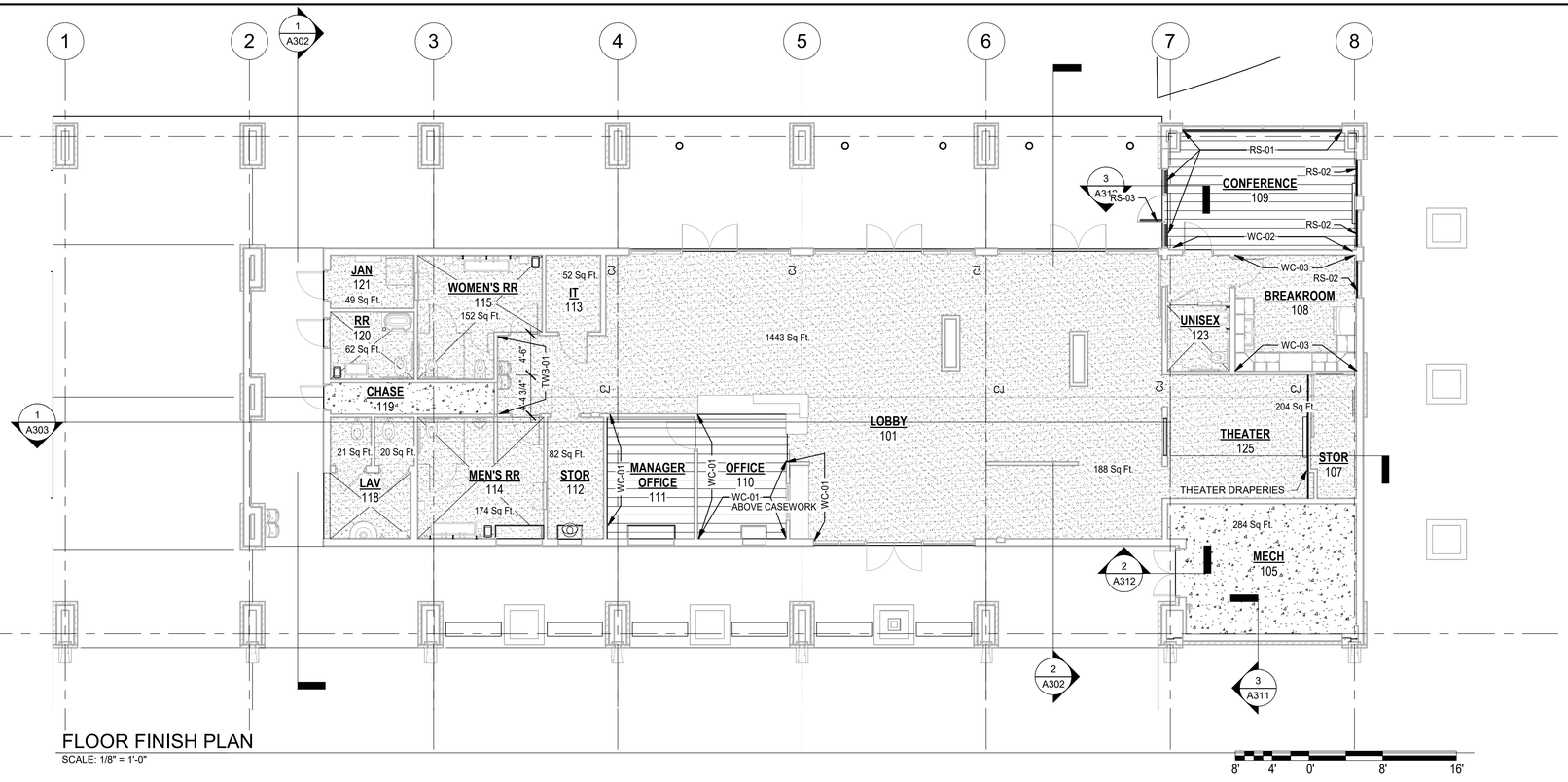
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FLOOR FINISH PLAN

SCALE: 1/8" = 1'-0"

FLOOR PATTERN LEGEND:

- RESINOUS FLOORING (RES-01)
- CARPET TILES (CPT-01)
- SEALED CONCRETE (SC)

ROLLER SHADES:

- RS-01 CONTINUOUS HEADER WITH MULTIPLE SHADES WITH WAND CONTROL
- RS-02 SINGLE SHADE AND HEADER WITH WAND CONTROL
- RS-03 SINGLE SHADE AND HEADER MOUNTED ON DOOR WOTH HOLD DOWN BRACKETS

KEYNOTES

GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND INFORM THE A/E IF THERE ARE ANY DISCREPANCIES BEFORE PROCEEDING TO DO WORK OR PURCHASE ORDERS.
2. CONTRACTOR SHALL COORDINATE WITH ALL TRADES PRIOR TO COMMENCING WORK.
3. SEE LIFE SAFETY PLAN FOR LOCATIONS AND TYPES OF RATED WALL ASSEMBLIES, FIRE EXTINGUISHERS, AND MEANS OF EGRESS.
4. REFER TO SHEET G103 FOR WALL TYPES INFORMATION.
5. COORDINATE WITH MECHANICAL, PLUMBING, AND ELECTRICAL PRIOR TO COMMENCING ANY WORK.
6. ALL INTERIOR DOORS SHALL BE 4" OFFSET FROM WALL UNLESS OTHERWISE NOTED.
7. ALLOW A MINIMUM OF 18 INCHES LATCH-SIDE CLEARANCE ON THE PULL SIDE OF ALL DOORS WITH MANUAL CLOSERS AND A MINIMUM OF 12 INCHES LATCH-SIDE CLEARANCE ON THE PUSH SIDE OFF ALL DOORS WITH MANUAL CLOSERS
8. GENERAL CONTRACTOR SHALL COORDINATE THE LOCATION OF REQUIRED BLOCKING IN WALLS TO RECEIVE CABINETS, SHELVING, TOILET ACCESSORIES, ETC.
9. ALLOW A MINIMUM OF 1 INCH CLEARANCE FROM THE EDGE OF ALL WALLS AND OUTSIDE FACE OF CASEWORK, TYPICAL.
10. (W# #) INDICATES WINDOW REQUIREMENT. SEE WINDOW SCHEDULES FOR SIZES, GLAZING, ETC. REQUIRED.
11. (101) INDICATES DOOR NUMBER. SEE DOOR SCHEDULE FOR SPECIFIC INFORMATION ON EACH DOOR.
12. SEE FINISH DRAWINGS FOR SPECIFIC FINISH AND SURFACE PREPARATION REQUIREMENTS FOR EACH SPACE.
13. SEE REFLECTED CEILING PLANS FOR SPECIFIC CEILING TYPES, HEIGHTS, DETAILS, LIGHTS, DIFFUSERS, ETC.
14. SEE CASEWORK DRAWINGS FOR SPECIFIC CASEWORK SIZES, FINISHES, AND OTHER REQUIREMENTS.
15. SEE STRUCTURAL DRAWINGS FOR ANY MISCELLANEOUS FRAMING MEMBERS THAT ARE WITH WALL CONSTRUCTION ABOVE CEILINGS. INDICATE BLOCK WALLS, ETC.
16. DETAILS LABELED "TYPICAL DETAILS" ON THE DRAWINGS APPLY TO ALL SITUATIONS THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY DETAILED. SUCH DETAILS APPLY WHETHER OR NOT THEY ARE KEYED IN AT EACH LOCATION.
17. SEE GENERAL NOTES ON LEGENDS AND ABBREVIATIONS SHEET FOR MORE INFORMATION CONCERNING WORK NOT SHOWN ON DRAWINGS.
18. METHOD FOR DIMENSIONING WALLS AND OPENINGS:
    - MASONRY WALLS: FACE TO FACE
    - EXTERIOR FRAME WALLS: FACE OF STUDS
    - INTERIOR FRAME WALLS: FACE OF STUDS

    UNLESS OTHERWISE NOTED.

PLAN LEGEND:

- NEW GALV. METAL STUD WALLS
- NEW INSULATED GALV. METAL STUD WALLS
- NEW CONCRETE MASONRY WALLS
- NEW BRICK VENEER
- NEW DECORATIVE PRECAST CONCRETE UNITS
- NEW ALUMINUM FIXED WINDOW
- NEW DOOR - REFER TO DOOR SCHEDULE
- DS DOWNSPOUT LOCATION
- FEC SEMI-RECESSED FIRE EXTINGUISHER CABINET
- FE WALL MOUNTED FIRE EXTINGUISHER

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STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE

INTERIOR FINISH PLAN

SHEET NUMBER.

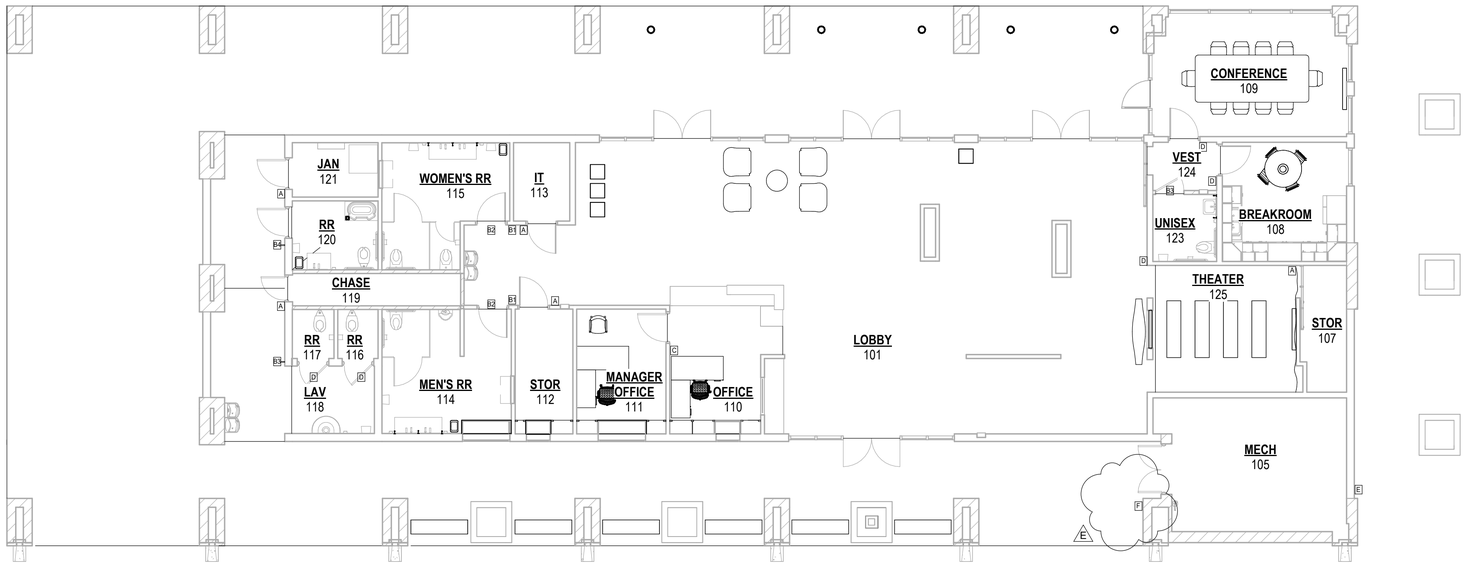
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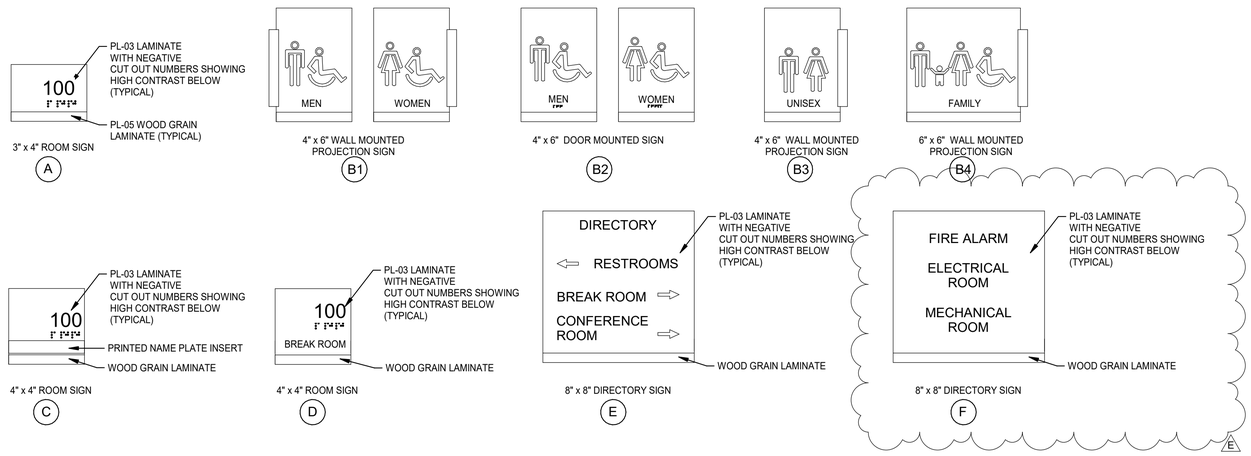
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FURNITURE PLAN

SCALE: 1/8" = 1'-0"



GRAPHIC SIGNAGE SCHEDULE

SCALE: 1/4" = 1'-0"

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STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE

FURNITURE AND FIXTURE PLAN

SHEET NUMBER.

I111

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ROOM FINISH SCHEDULE MAIN

ROOM NO.	ROOM NAME	FLOOR		WALLS								CEILING			REMARKS / COMMENTS
				NORTH		EAST		SOUTH		WEST					
		FINISH	MAT'L	MAT'L	FINISH	MAT'L	FINISH	MAT'L	FINISH	MAT'L	FINISH	MAT'L	FINISH	HEIGHT	
101	LOBBY	RES-01	RESINOUS	GLAZING/GYP BD	P-01	PAINT/ GYP BD	P-01	PAINT/GYP-BD	P-01	PAINT / GYP BD	P-01	TECTUM PANELS IN GRID	MP-01	VARIES	INTERIOR GRADE - SEE SHEET I101 FOR VWC LOCATION
105	MECH	CONC.	-----	PAINT/ GYP BD	P-04	PAINT / GYP BD/ MASONRY	P-04	PAINT / GYP BD / MASONRY	P-04	PAINT / GYP BD / MASONRY	P-04	-----	-----	VARIES	OPEN TO STRUCTURE
107	STOR	RES-01	RESINOUS	PAINT/ GYP BD	P-04	PAINT/ GYP BD	P-04	PAINT/GYP-BD	P-04	PAINT / GYP BD	P-04	ACOUSTICAL TILE	ACT-01	10'-0"	
108	BREAKROOM	RES-01	RESINOUS	VWC-03	VWC-03	VWC-03	VWC-03	PAINT/GYP-BD	P-03	PAINT/GYP BD	P-03	ACOUSTICAL TILE	ACT-01	10'-0"	RS-02 SEE SHEET A405 / SPECIFICATIONS
109	CONFERENCE	CPT-01	CARPET TILES	GLAZING/GYP BD	P-02	PAINT/ GYP BD	P-02	VWC-01/GYP BD	P-02	GLAZING /GYP BD	P-02	ACOUSTICAL TILE	ACT-01	10'-0"	RS-01,RS-02,RS-03 SEE SHEET A405 / SPECIFICATIONS
110	OFFICE	CPT-01	CARPET TILES	------	---	GYP BD	VWC-01	PAINT/GYP-BD	VWC-01	PAINT/GYP BD	VWC-01	ACOUSTICAL TILE	ACT-01	10'-0"	SEE SHEET I101 FOR VWC LOCATION
111	MANAGER OFFICE	CPT-01	CARPET TILES	PAINT/ GYP BD	P-02	PAINT/ GYP BD	P-02	PAINT/GYP-BD	P-02	PAINT/GYP BD	P-02	ACOUSTICAL TILE	ACT-01	9'-0"	
112	STOR	RES-01	RESINOUS	PAINT/ GYP BD	P-04	PAINT/ GYP BD	P-04	PAINT/GYP-BD	P-04	PAINT/GYP BD	P-04	ACOUSTICAL TILE	ACT-01	9'-0"	
113	IT	RES-01	RESINOUS	PAINT/ GYP BD	P-04	PAINT/ GYP BD	P-04	PAINT/GYP-BD	P-04	PAINT/GYP BD	P-04	ACOUSTICAL TILE	ACT-01	9'-0"	
114	MEN'S RR	RES-01	RESINOUS	CERAMIC TILE	CWT-01	PAINT/GYP BD	P-02	CERAMIC TILE	CWT-01	PAINT / GYP BD	P-02	PAINTED GYP BD	P-02	9'-0"	
115	WOMEN'S RR	RES-01	RESINOUS	CERAMIC TILE	CWT-01	PAINT/ GYP BD	P-02	CERAMIC TILE	CWT-01	PAINT / GYP BD	P-02	PAINTED GYP BD	P-02	9'-0"	
116	RR	RES-02	RESINOUS	PORCELAIN TILE	PWT-01	PORCELAIN TILE	PWT-01	PORCELAIN TILE	PWT-01	CERAMIC TILE	CWT-01	PAINTED GYP BD	P-02	10'-0"	
117	RR	RES-02	RESINOUS	PORCELAIN TILE	PWT-01	PORCELAIN TILE	PWT-01	PORCELAIN TILE	PWT-01	CERAMIC TILE	CWT-01	PAINTED GYP BD	P-02	10'-0"	
118	LAV	RES-02	RESINOUS	PORCELAIN TILE	PWT-01	PORCELAIN TILE	PWT-01	PORCELAIN TILE	WT-01PWT-01	CERAMIC TILE	CWT-01	PAINTED GYP BD	P-02	10'-0"	
119	CHASE	CONC.	CONCRETE	----	---	---	---	---	---	---	---	---	---	____	
120	RR	RES-02	RESINOUS	PORCELAIN TILE	PWT-01	PORCELAIN TILE	PWT-01	PORCELAIN TILE	PWT-01	PORCELAIN TILE	PWT-01	PORCELAIN TILE	PWT-01	9'-0"	
121	JAN	RES-02	RESINOUS	CERAMIC TILE / PAINT/GYP BD	CWT-01/P-02	CERAMIC TILE / PAINT / GYP BD	CWT-01 /P-02	CERAMIC TILE / PAINT / GYP BD	CWT-01/P-02	CERAMIC TILE / PAINT / GYP BD	CWT-01/P-02	CERAMIC TILE / PAINT / GYP BD	CWT-01/P-02	9'-0"	
123	UNISEX	RES-01	RESINOUS	PAINTED GYP BD	P-02	PORCELAIN TILE	CT-01	PAINTED GYP BD	P-02	PAINTED GYP BD	P-02	PAINTED GYP BD	P-02	10'-0"	
124	VEST	RES-01	RESINOUS	PAINTED GYP BD	P-02	PAINTED GYP BD	P-02	PAINTED GYP BD	P-02	PAINTED GYP BD	P-02	PAINTED GYP BD	P-02	10'-0"	
125	THEATER	RES-01	RESINOUS	PAINTED GYP BD	P-01	PAINTED GYP BD	P-01	PAINTED GYP BD	P-01	PAINTED GYP BD	P-01	PAINTED GYP BD	P-01	10'-0"	EAST WALL TO HAVE FULL HEIGHT DRAPERIES

FINISH LEGEND

FLOORING:

RESINOUS FLOORING:

RES-01
MFR: STONHARD, INC. - LIQUID ELEMENTS
SERIES: SMOOTH-DUO
OVERALL SYSTEM THICKNESS: 3/16"
FINISH: MATTE FINISH
INSTALL: INTEGRAL 4" COVE
COLOR: KILKENNY CASTLE

RES-02 EXTERIOR
MFR: STONHARD, INC. - LIQUID ELEMENTS
SERIES: SMOOTH-DUO
OVERALL SYSTEM THICKNESS: 3/16"
FINISH: MATTE FINISH
INSTALL: INTEGRAL 4" COVE
COLOR: KILKENNY CASTLE

SC-01
SEALED CONCRETE EXTERIOR FLOORING:

WATER REPELLANT
MFR: SHERWIN WILLIAMS
SC 1 - SILOXANE

CARPET:

CPT-01
MFR: J & J INDUSTRIES
SERIES: EMULSION
SIZE: 24" x 24" TILES
COLOR: 2319 VITREOUS
INSTALLATION PATTERN:

RUBBER BASE:

RB-01
MFR: TARKETT - JOHNSONITE
SERIES: REVEAL
ITEM# - MW-TA4-F6
HEIGHT: 6" COVE BASE
COLOR: TA4 GATEWAY

PAINT:

SEE SPECIFICATIONS FOR PRIMER AND NUMBER OF COATS

INTERIOR -

P-01 SHERWIN WILLIAMS - PEPPERCORN SW 7674 (LOBBY WALLS)
TYPE: LATEX EPOXY, SATIN/EGGSHELL FINISH

P-02 SHERWIN WILLIAMS - NATUREL SW 7542 (CONF. ROOM/OFFICES)
TYPE: LATEX EPOXY, SATIN/EGGSHELL FINISH

P-03 SHERWIN WILLIAMS - WORLDLY GREY SW 7043 (BREAKROOM)
TYPE: LATEX EPOXY, SATIN/EGGSHELL FINISH

P-04 SHERWIN WILLIAMS - DRIFT OF MIST SW9166 (BACK OF HOUSE)

CEILINGS:

EXTERIOR PORCH:

3/4" THICK CYPRESS BOARD CEILING OVER 5/8" PLYWOOD SHEATHING WITH LIQUID APPLIED VAPR BARRIER BETWEEN PLYWOOD AND CYPRESS. CYPRESS TO BE STAINED AND SEALED FOR EXTERIOR USE. 40% NOMINAL 4" WIDE AND 60% NOMINAL 6" WIDE BOARDS SPACED 3/8" APART,TYPICAL.

INTERIOR CEILING -

GRID -
MFG: ARMSTRONG - 2'X 2' PRELUDE XL 15/16" SUSPENDED ACOUSTICAL TILE AND GRID WITH #9 HANGER WIRE 48"O.C. TWIST MIN. SEE FINISH SCHEDULE AND REFLECTED CEILING PLAN.

CEILING TILE -
MFG: ARMSTRONG TECTUM DESIGNART - LINES - TEGULAR COARSE TEXTURE
PATTERN: BANDS 8186D07T10TBZ BRONZITE

WALLS:

WALLCOVERING:

WC-01 (LOBBY)
MFG: ARTE INTERNATIONAL
COLLECTION: ESSENTIALS / MODULAIRE
PATTERN: MODULE
REF. # 53033
COMPOSITION: WALLPAPER ON NON-WOVEN BACKING
DIMENSIONS: ROLLS OF 9.30 YDS X 27.56" = 64 SQ. FT.
REPEAT: 25.20" / 16.80"

WC-02 (CONFERENCE ROOM)
MFG: MAYA ROMANOFF
COLLECTION: WATER HYACINTH PARQUET
PATTERN COLORWAY: GATOR GREEN
REF. # MR-WH-1667
COMPOSITION: WATER HYACINTH, NON-WOVEN BACKING
DIMENSIONS: APPROX. 36" WIDE UNTRIMMED, 9 SQ. FT./YD.
REPEAT: N/A MOTIF: APPROX. 18" X 18"
FIRE RATING: ASTM E84 CLASS A

WC-03 (BREAKROOM)
MFG: MDC
COLLECTION: BOLTA
PATTERN COLORWAY: TAHITIAN TAPA COFFEE
REF. # BBTT04
COMPOSITION:
DIMENSIONS: 34"W
VERTICAL REPEAT: 23"
REPEAT MATCH TYPE: STRAIGHT
FIRE RATING: CLASS A

INTERIOR CERAMIC WALL ACCENT TILE:

CWT-01 (INTERIOR BATHROOM WET WALLS)
MFG: EMIL CERAMICA / BPI
COLLECTION: TELE di MARMO ONYX
COLOR: ONYX GREEN
DIMENSIONS: 12" X 24"
THICKNESS: 9.5MM
GROUT: LATICRETE #89 SMOKE GREY

INTERIOR TEXTURED WALL BOARD:

TWB-01
MFG: 3 FORM 4'x8' TEXTURED PANEL (SO-567205.4)
STYLE: LUXE + FOSSIL GRAY
MATERIAL: PROFILE 3/4" (19mm)
(CUSTOM COLOR FINISH)

EXTERIOR LARGE FORMAT EXTERIOR PORCELAIN TILE

PWT-01 (EXTERIOR CLADDING)
MFG: CROSSVILLE
COLLECTION: PORCELAIN TILE PANELS OXIDE 3+
COLOR: NERO - L1461
DIMENSIONS: 3' x 5'
THICKNESS:
GROUT COLOR:

PLASTIC LAMINATE:

PLASTIC LAMINATE:

PL-01 - FORMICA
DECO METAL
COPPER PATINA M9424-99
(FRONT RECEPTION DESK)

PL-02 - WILSONART
NICKEL EV 4813-60
(FRONT RECEPTION DESK
DISPLAY CABINET)

PL-03 - WILSONART
SABLE SOAPSTONE 4883-38
(BREAKROOM BASE)(SIGNAGE)

PL-04 - WILSONART
CLASSIC LINEN 4943-38
(BREAKROOM UPPERS)

PL-05 - WILSONART
FRENCH PEAR 8220-38
(SIGNAGE)

SOLID SURFACE:

SS-01 - CORIAN QUARTZ
MARBLE MIST
(RECEPTION DESK AND
BREAKROOM COUNTERTOP)

SS-02 - CORIAN SOLID SURFACE
DEEP ESPRESSO
(RECEPTION DESK TRANSACTION
COUNTERTOP)

ACRYLIC:

AC-01 - (LOBBY)
MFG: 3-FORM
SERIES: VARIA 1/4"
COLOR: BANANA FIBER DARK+POWDER (DO3)
FINISH: SANDSTONE

ROLLER SHADES:

RS-01 ROLLER SHADE - CONTINUOUS HEADRAIL
MULTI SHADE INSTALLATION
WAND CONTROL

RS-02 ROLLER SHADE - SINGLE HEADRAIL
AND SHADE
WAND CONTROL

RS-03 ROLLER SHADE - SINGLE SHADE ON
FULL LITE DOOR

THEATRE DRAPERIES:

MFG: KASMIR
FABRIC PATTERN: CASUAL CHIC #5188/22
WIDTH: 59" MADE TO FULL HEIGHT
FLAMMABILITY:CAL 117-2013 SOLID WOVENS
ABRASION: 30,000 WYZENBEEK DOUBLE RUBS

THEATRE WALL- EAST SIDE ,
SEWN IN REVERSED BOX PLEATED FULLNESS
MADE MIN. OF 2.5 FULLNESS
THESE DRAPERIES ARE NOT OPERABLE BUT WILL HAVE SPLIT PANELS FOR DOOR ACCESS

TOILET PARTITIONS:

PLASTIC:

PRS 1 SCRANTON - HAMMERED BRONZE
(BOTH MEN AND WOMENS ROOMS)

LAVATORIES:

ELX SERIES LAVATORY SOLID SURFACE:

SS-1 BRADLEY - EVERO CLASSIC - GEO SERIES
YUKON (MENS ROOM)

SS -2 BRADLEY - EVERO CLASSIC - GEO SERIES
ARUBA (WOMENS ROOM)

DOORS:

FRP DOORS

MFR: CORRIM - FACTORY FINISHED
FINISH: POLYURETHANE
TYPE: SEMI GLOSS
COLOR: SANTA FE TAN TG 7300

ABBREVIATIONS:

ACT	ACOUSTICAL CEILING TILE	NA	NOT APPLICABLE
CG	CORNER GUARD	NF	NO FINISH
CR	CHAIR RAIL	MFR	MANUFACTURER
CPT	CARPET TILE	MR	MOISTURE RESISTENT
CT	CERAMIC TILE	PL	PLASTIC LAMINATE
CWT	CERAMIC WALL TILE	PNT	PAINT
CBB	CEMENTITIOUS BACKER BOARD	PT	PORCELAIN TILE
EX	EXISTING	PTB	PORCELAIN TILE BASE
EXP	EXPOSED STRUCTURE	RB	RUBBER BASE
FRP	FIBERGLASS REINFORCED PLASTIC	RES	RESINOUS FLOORING
GB	GYPSUM BOARD	RF	RUBBER FLOORING
GT	GLASS WALL TILE	PRS	PLASTIC RESIN PANEL
GCWT	GLAZED CERAMIC WALL TILE	PW	PLASTIC WOOD
LNF	LINOLEUM FLOORING	SC	SEALED CONCRETE
LVT	LUXURY VINYL TILE	SS	SOLID SURFACE
LVP	LUXURY VINYL PLANKS	VCT	VINYL COMPOSITION TILE
		VS	VINYL SHEET FLOORING
		WB	WALL BASE
		WBB	WOOD BEAD BOARD

GENERAL NOTES:

1. ALWAYS REFER TO DRAWINGS FOR EXACT LOCATIONS.
2. REFER TO MANUFACTURER'S SPECIFICATIONS FOR INSTALLATION DIRECTIONS & METHODS.
3. UNLESS NOTED, DO NOT USE TRANSITION STRIPS, INSTALL FLOORING MATERIALS FLUSH & BUTTED NEATLY NEXT TO ONE ANOTHER.
4. PAINT FINISH TO BE FREE OF STREAKS, RUNS & VARIATIONS.
5. CONTRACTOR SHALL SUBMIT SAMPLES / SWATCHES FOR APPROVAL OF ALL MATERIALS OUTLINED ON FINISH LEGEND FOR VERIFICATION.
6. SEE FINISH FLOOR PLAN FOR FLOOR PATTERNS AND DIRECTION OF INSTALLATION.
7. CONTRACTOR TO TAKE MEASURES TO PROTECT ALL NEW AND REMAINING FINISHES THROUGHOUT THE DURATION OF CONSTRUCTION. ANY FINISHES DAMAGED DURING CONSTRUCTION SHALL BE REPLACED / REPAIRED BY CONTRACTOR.
8. REFER TO REFLECTED CEILING PLAN FOR CEILING MATERIAL LOCATIONS AND HEIGHTS.
9. INDIVIDUAL ROOM SIGNAGE / PLATES TO BE DETERMINED AND COORDINATED WITH OWNER'S REPRESENTATIVE.

LEGEND - FINISH SCHEDULE LEGEND

SCALE: 1/4" = 1'-0"

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REVISIONS DESCRIPTION

DATE:	REV	
07/17/2023	A	30% Submission
10/02/2023	B	90% Submission
10/27/2023	C	100% Submission

DATE: 10/27/2023
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DRAWN BY: Anne Brooks
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PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
ANDREW P MARASCA
6996
REGISTERED ARCHITECT

SHEET TITLE
FINISH SCHEDULE AND LEGEND

SHEET NUMBER
I601

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LEGEND

- POSITIVE PRESSURE SUPPLY DUCT TURNING UP
- NEGATIVE PRESSURE RETURN OR EXHAUST DUCT TURNING UP
- POSITIVE PRESSURE SUPPLY DUCT TURNING DOWN
- NEGATIVE PRESSURE RETURN OR EXHAUST DUCT TURNING DOWN
- PIPING ELBOW TURN UP
- ELBOW TURN DOWN
- CONNECTION, BOTTOM
- CONNECTION, TOP
- NEW UNDERGROUND PIPING
- CONDENSATE DRAIN PIPING
- 24"/12" FLAT OVAL DUCT SIZE, FIRST SIZE LISTED IS SIDE SHOWN IN PLANS.
- 24"x12" RECTANGULAR DUCT SIZE. FIRST SIZE LISTED IS SIDE SHOWN IN PLANS.
- EXTERNALLY INSULATED DUCTWORK
- EXISTING DUCTWORK TO REMAIN
- EXISTING DUCTWORK TO BE DEMOLISHED
- EXTERNALLY INSULATED ROUND FLEXIBLE DUCTWORK
- DUCT ELBOW WITH TURNING VANES
- RADIUSED DUCT ELBOW
- FLEXIBLE DUCT CONNECTION
- MANUAL VOLUME BALANCING DAMPER
- TRANSITION
- FLEX DUCT TAKE OFF WITH MVD
- BRANCH DUCT TAKEOFF WITH MVD
- RETURN OR SUPPLY DEVICE WITH MVD DIRECTLY BELOW MAIN TRUNK DUCT
- TEE WITH TURNING VANES
- MOTORIZED DAMPER (MFD)
- FIRE DAMPER (FD)
- 1 DETAIL X-000 — SHEET REFERENCED
- EF-1 EQUIPMENT TAG
- 1 SHEET NOTE
- T THERMOSTAT MOUNTED AT 54" AFF. ('1' INDICATES AHU CONTROLLED) ('N' INDICATES NIGHT SETBACK)
- H H "HUMIDISTAT", CO2 "CARBON DIOXIDE"
- S SMOKE DETECTOR (PROVIDED BY DIVISION 26, INSTALLED BY DIVISION 23 AND WIRED BY DIVISION 26).
- UNDER CUT DOOR 3/4"
- EXTENT OF DEMOLITION OR POINT OF CONNECTION TO EXISTING
- 12"x12" DUCT ACCESS DOOR

GENERAL NOTES

1. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES REQUIRED OPENINGS IN WALLS, FOUNDATIONS, FLOORS, AND ROOFS.
2. FIELD VERIFY ALL DIMENSIONS, SIZES, AND CONNECTION LOCATIONS BEFORE ANY DUCTWORK FABRICATION OR PIPE CUTTING IS COMMENCED. PROVIDE ANY OFFSETS, TRANSITIONS, AND OTHER MINOR ADJUSTMENTS AS REQUIRED FOR A COMPLETE AND WORKING SYSTEM INSTALLATION.
3. COORDINATE FLOOR DRAIN LOCATIONS IN MECHANICAL ROOMS WITH ANY EQUIPMENT LOCATED IN THE MECHANICAL ROOM. ROUTE CONDENSATE DRAIN PIPING OUT OF WALKWAY PATHS. CONDENSATE DRAIN PIPING SHALL BE COPPER TYPE L WITH A MIN. OF 1" FLEXIBLE ELASTOMERIC CELLULAR INSULATION AND VAPOR BARRIER.
4. VERIFY MECHANICAL EQUIPMENT LOCATIONS AND PROVIDE ADEQUATE MAINTENANCE CLEARANCE AROUND EACH PIECE OF EQUIPMENT PER THE MANUFACTURER'S RECOMMENDATIONS.
5. PROVIDE CLEARANCE IN FRONT OF ELECTRICAL PANELS AND OTHER ELECTRICAL EQUIPMENT PER THE NATIONAL ELECTRICAL CODE REQUIREMENTS. COORDINATE WITH OTHER TRADES.
6. HVAC REGISTERS, GRILLES, DIFFUSERS, PIPING, ETC. ARE SHOWN IN APPROXIMATE LOCATIONS. ACTUAL LOCATIONS SHALL BE DETERMINED IN THE FIELD, FULLY COORDINATED AND IN COMPLIANCE WITH CONTRACT DOCUMENTS. IN NO INSTANCE SHALL THE LOCATION VIOLATE STANDARDS, CODES, GOOD HVAC PRINCIPLES, AND THE INTENT OF THE HVAC DESIGN. CONSULT ENGINEER PRIOR TO RELOCATION. MECHANICAL DRAWINGS, IN SOME RESPECTS, ARE DIAGRAMMATIC. COORDINATION, LAYOUT OF SECTIONS, OR FIELD MEASUREMENTS MAY BE REQUIRED PRIOR TO FABRICATION OF DUCTWORK OR PIPING. MODIFY SIZES, AS DIRECTED BY ENGINEER, FOR FIT. ARRANGE ALL DUCTWORK AND PIPING IN A NEAT AND ORDERLY MANNER. COORDINATE WITH OTHER TRADES.
7. CONTRACTOR SHALL NOT CUT ANY STRUCTURAL MEMBERS OF BUILDING.
8. OUTSIDE AIR INLETS TO BE LOCATED A MINIMUM OF 10 FT FROM ANY EXHAUST AIR OUTLET OR PLUMBING VENT STACK. COORDINATE WITH THE CONTRACTORS IN THE FIELD. OUTSIDE AIR INTAKES FOR BUILDING VENTILATION SHALL BE LOCATED 10 FT TO BOTTOM OF INTAKE ABOVE GRADE.
9. PROVIDE WATER PROOF SEALING OF PIPE AND DUCT PENETRATIONS OF EXTERIOR WALLS, FLOORS, AND/OR ROOF.
10. ALL PIPING SYSTEMS SHALL BE FLUSHED UNTIL CLEAN BEFORE EQUIPMENT CONNECTION.
11. PENETRATIONS THROUGH FIRE RATED FLOORS AND WALLS ARE TO BE FIRE SEALED SO AS TO MAINTAIN FLOOR OR WALL INTEGRITY IN THE EVENT OF A FIRE. ALL PENETRATIONS OF FIREWALLS, CEILINGS, FLOORS, ETC. FOR PIPING SHALL BE UL LISTED FIRESTOPS AND SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR SHALL OBTAIN MANUFACTURER'S SHOP DRAWINGS FOR ALL JOBSITE PENETRATIONS.
12. DO NOT MOUNT DISCONNECT SWITCHES ON HVAC EQUIPMENT EXCEPT AS RECOMMENDED BY MANUFACTURER.
13. MOUNT ALL DUCTWORK AS HIGH AS POSSIBLE, BETWEEN FRAMING IF NECESSARY. AVOID ROUTING DUCTWORK OVER LIGHTS WHEREVER POSSIBLE. WHERE DUCTWORK MUST RUN OVER LIGHTS MAINTAIN MINIMUM 4" CLEARANCE BETWEEN DUCT INSULATION AND TOP OF LIGHTS. COORDINATE WITH STRUCTURAL.
14. ABOVE-CEILING MECHANICAL EQUIPMENT SHALL BE INSTALLED NO MORE THAN 2'-6" ABOVE SUSPENDED CEILINGS. AVOID INSTALLATION ABOVE LIGHTS AND MAINTAIN ACCESS TO, AND CLEARANCE AROUND MECHANICAL EQUIPMENT AS REQUIRED FOR MAINTENANCE OF UNIT AND CONTROLS. IF MECHANICAL EQUIPMENT MUST BE INSTALLED ABOVE A LIGHT, MAINTAIN MINIMUM 6" CLEAR BETWEEN BOTTOM OF UNIT AND TOP OF LIGHT.
15. EQUIPMENT OF DIFFERING ELECTRICAL CHARACTERISTICS, PHYSICAL DIMENSIONS, CAPACITIES, AND RATINGS MAY BE FURNISHED, PROVIDED SUCH PROPOSED EQUIPMENT IS APPROVED BY THE ENGINEER IN WRITING AND CONNECTING MECHANICAL SERVICES, CIRCUIT BREAKERS, CONDUIT, MOTORS, BASES, AND EQUIPMENT SPACES ARE INCREASED. ADDITIONAL COSTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR PROVIDING DIFFERING EQUIPMENT.
16. THERMOSTATS SHALL BE GENERALLY LOCATED AS SHOWN. THE EXACT LOCATION SHALL BE FIELD COORDINATED TO AVOID INTERFERENCE WITH WALL MOUNTED WORK AND FURNITURE. THERMOSTATS SHALL BE PROVIDED WITHOUT COMMUNICATION PORTS.
17. D OWNER/OPERATOR SHALL PROVIDE PURITY TESTS OF EXISTING HYDRONIC SYSTEMS TO THE CONTRACTOR UPON REQUEST PRIOR TO CONNECTION OF NEW HYDRONIC SYSTEMS TO THE EXISTING SYSTEMS.
18. WORK SHALL COMPLY WITH THE FOLLOWING AGENCIES:
    - 2015 INTERNATIONAL ENERGY CONSERVATION CODE
    - 2021 INTERNATIONAL BUILDING CODE
    - 2021 INTERNATIONAL MECHANICAL CODE
    - 2021 INTERNATIONAL PLUMBING CODE
    - 2021 INTERNATIONAL FUEL GAS CODE
    - NATIONAL FIRE PROTECTION AGENCY (NFPA)
    - AMERICAN SOCIETY OF HEATING, REFRIGERATING, AND AIR CONDITIONING ENGINEERS (ASHRAE)
    - ALL APPLICABLE CODES, ORDINANCES, AND THE AUTHORITY HAVING JURISDICTION.

GENERAL DUCT WORK NOTES

1. UNLESS NOTED OTHERWISE, SUPPLY AIR DUCTWORK UPSTREAM OF AIR TERMINAL AND FABRIC DUCT TO BE DOUBLE-WALLED MEDIUM PRESSURE ROUND OR FLAT OVAL. PROVIDE SMACNA STATIC PRESSURE CLASS AS REQUIRED FOR SCHEDULE EXTERNAL STATIC PRESSURE, SEAL CLASS A, INTERNALLY INSULATED WITH 2" OF INTERSTITIAL INSULATION, DUCT SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS. PROVIDE FIRST 25 FEET OF DOUBLE-WALLED MEDIUM PRESSURE ROUND OR FLAT OVAL SUPPLY DUCTWORK, IMMEDIATELY DOWNSTREAM OF AIR HANDLING UNITS, WITH PERFORATED INNER LINER FOR SOUND CONTROL.
2. SUPPLY AIR DUCTWORK DOWNSTREAM OF AIR TERMINAL UNITS (EXCEPT TAKEOFFS TO SUPPLY AIR DIFFUSERS) TO BE SINGLE WALL LOW PRESSURE RECTANGULAR, SMACNA STATIC PRESSURE CLASS 2" W.G., SEAL CLASS A, . DUCT SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS.
3. RETURN AIR DUCTWORK TO BE SINGLE WALL LOW PRESSURE RECTANGULAR, SMACNA STATIC PRESSURE CLASS 2" W.G., SEAL CLASS A. DUCT SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS.
4. OUTSIDE AIR INTAKE AND SUPPLY DUCTWORK TO BE SINGLE WALL LOW PRESSURE RECTANGULAR, SMACNA STATIC PRESSURE CLASS 2" W.G., SEAL CLASS A. DUCT SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS.
5. EXHAUST AIR DUCTWORK TO BE LOW PRESSURE SINGLE WALL RECTANGULAR, SMACNA STATIC PRESSURE CLASS 2" W.G., SEAL CLASS A.
6. ALL ROUND FLEXIBLE DUCT SHALL BE FACTORY PRE-INSULATED WITH CORRUGATED ALUMINUM LINER. MAXIMUM LENGTH OF ANY FLEXIBLE DUCT RUNOUT SHALL BE 5'. WHERE LENGTH REQUIRED EXCEEDS 5', INSTALL EXTERNALLY INSULATED ROUND SNAPLOCK DUCT FOR BALANCE OF DISTANCE TO SPIN-IN TAP AT MAIN DUCT TRUNK.
7. PROVIDE ALL TAKE OFF FITTINGS AND DIFFUSER RUNOUTS WITH MANUAL VOLUME DAMPER WITH EXTENDED DAMPER OPERATOR HANDLE. SPIN IN FITTINGS WILL NOT BE ACCEPTABLE.
8. ALL DUCTWORK CONSTRUCTION, DUCT HANGERS, AND SUPPORTS SHALL COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE" FOR METAL THICKNESS', REINFORCING TYPES AND INTERVALS, TIE-ROD APPLICATIONS, AND JOINT TYPES AND INTERVALS. SUPPORT HORIZONTAL DUCTS WITHIN 24" OF EACH ELBOW AND WITHIN 48" OF EACH BRANCH. SEE DUCT HANGER DETAILS.
9. ALL DUCT ELBOWS SHALL BE LONG RADIUS TYPE OR, WHERE INDICATED, SQUARE ELBOW WITH TURNING VANES. PROVIDE TURNING VANES IN ALL SQUARE ELBOWS IN TRUNK DUCTWORK AND DIFFUSER CONNECTIONS.
10. TRANSFER DUCTS TO BE INTERNALLY INSULATED WITH 1" THICK ACOUSTICAL DUCT LINER. DUCT SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS.
11. VERIFY COLLAR SIZES ON ALL AIR TERMINALS, EQUIPMENT INLETS AND OUTLETS. TRANSITION DUCTWORK AS NECESSARY. EXTERNALLY INSULATE ALL TRANSITIONS AT EQUIPMENT CONNECTIONS.
12. D PROVIDE FLEXIBLE CONNECTIONS, AND VIBRATION ISOLATORS FOR INTERNALLY ISOLATED UNITS. PROVIDE FLEXIBLE DUCT CONNECTORS AT ALL HVAC EQUIPMENT CONNECTIONS COMPLYING WITH UL-181, NFPA 90A, AND NFPA 90B.
13. DUCT INSULATION: THE MINIMUM INSULATION VALUE FOR SUPPL, RETURN, OR EXHAUST IS R-6 IN SEMI-CONDITIONED SPACES AND R-8 IN UNCONDITIONED SPACES TO COMPLY WITH 2015 IECC.

GENERAL PIPING NOTES

1. ALL PIPING LOCATIONS SHOWN IN THIS DRAWING SET ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.
2. PROVIDE WALL SLEEVE AND ESCUTCHEON PLATES FOR ALL WALL PIPING PENETRATIONS. GALVANIZED STEEL SHEET SLEEVES. PROVIDE A MINIMUM 1" ANNULAR SPACE. PROVIDE CONTINUOUS INSULATION THROUGH SLEEVE.
3. ALL PIPING PENETRATIONS (FIRE WALLS, CEILINGS, FLOORS) SHALL BE UL LISTED FIRESTOPS AND SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR SHALL RETAIN MANUFACTURER SHOP DRAWINGS AT JOBSITE FOR ALL PENETRATIONS
4. PROVIDE STAINLESS STEEL INSULATED PIPE SADDLE.
5. PROVIDE STAINLESS STEEL HARDWARE ON ALL EXTERIOR VALVES.

ABBREVIATIONS

@	AT
AAV	AUTOMATIC AIR VENT
ACC	AUTOMATIC CONTROL CHILLER
ACD	AUTOMATIC CONTROL DAMPER
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AFMS	AIRFLOW MEASURING STATION
AHRI	AIR-CONDITIONING, HEATING AND REFRIGERATION INSTITUTE
AH	AIR HANDLER
AS	AIR SEPERATOR
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS
BD	BELT DRIVE
CD	CEILING DIFFUSER
CF	CHEMICAL FEEDER
CFM	CUBIC FEET PER MINUTE
CONT.	CONTINUOUS
COP	COEFFICIENT OF PERFORMANCE
CT	COOLING TOWER
CW	CONDENSER WATER
CWP	CONDENSER WATER PUMP
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DAH	MINI SPLIT AIR HANDLER (HEAT PUMP)
DCA	MINI SPLIT CONDITIONER (COOLING ONLY)
DCU	MINI SPLIT CONDENSING UNIT (COOLING ONLY)
DD	DIRECT DRIVE
DDC	DIRECT DIGITAL CONTROL
DHP	MINI SPLIT HEAT PUMP UNIT
DPS	DIFFERENTIAL PRESSURE SENSOR
DWGS.	DRAWINGS
EA	EXHAUST AIR
EAL	EXHAUST AIR LOUVER
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EG	EXHAUST GRILLE
EH	ELECTRIC HEATER
EL	ELEVATION
EMCS	ENERGY MANAGEMENT AND CONTROL SYSTEM
ENT	ENTERING
ERH	ELECTRIC RADIANT HEATER
ERV	ENERGY RECOVERY VENTILATOR
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
FD	FIRE DAMPER
FPM	FEET PER MINUTE
GI	GRAVITY INTAKE
GPM	GALLONS PER MINUTE
GR	GRAVITY RELIEF
GSHP	GROUND SOURCE HEAT PUMP
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
HP	HEAT PIPE
HPU	HEAT PUMP UNIT
IPLV	INTEFRATED PART LOAD VALUE
KH	KITCHEN HOOD
LFD	LOUVERED FACE DIFFUSER
LPS	LITERS PER SECOND
LV	LINE VOLTAGE
LVG	LEAVING METERS
mm	MILLIMETERS
MAU	MAKE-UP AIR UNIT
MAX.	MAXIMUM
MIN.	MINIMUM
MVD	MANUAL VOLUME DAMPER
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
NPLV	NON-STANDARD PART LOAD VALUE
OA	OUTSIDE AIR
OAL	OUTSIDE AIR LOUVER
OAU	OUTSIDE AIR UNIT
O.C.	ON CENTER
PRV	PRESSURE REDUCING VALVE
P/T	PRESSURE/TEMPERATURE
RA	RETURN AIR
RAG	RETURN AIR GRILLE
SA	SUPPLY AIR
SD	SMOKE DETECTOR
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SF	SUPPLY FAN
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION
SPT	STATIC PRESSURE TRANSMITTER
SWR	SIDEWALL REGISTER
TAG	TRANSFER AIR GRILLE
TSTAT	THERMOSTAT
TT	TEMPERATURE TRANSMITTER
TSP	TOTAL STATIC PRESSURE
TYP.	TYPICAL
VE	VEHICLE EXHAUST
W/	WITH
WCC	WATER COOLED CHILLER
W.G.	WATER GAUGE

DIFFUSER/GRILLE LEGEND

CEILING DIFFUSER (CD)	ALUMINUM SQUARE PLAQUE CEILING DIFFUSER SUITABLE FOR INSTALLATION IN GYPSUM BOARD CEILINGS OR LAY-IN INSTALLATION IN TILE CEILINGS. 24"x24" MODULE SIZE, NECK SIZE AND AIRFLOW AS INDICATED. PROVIDE WITH SQUARE-TO-ROUND NECK TRANSITION AND BALANCING DAMPER AS REQUIRED. NOISE CRITERIA SHALL BE LIMITED TO 20 NC. PRESSURE DROP SHALL BE LIMITED TO 0.1". DIFFUSER SHALL HAVE A FOUR WAY THROW PATTERN.
RETURN REGISTER (RAR) OR RETURN GRILLE (RAG) OR TRANSFER GRILLE (TAG) OR TRANSFER REGISTER (TAR) OR EXHAUST GRILLE (EAG) OR EXHAUST REGISTER (EAR)	ALUMINUM REGISTER WITH 0° DEFLECTION AND 3/4" SPACING SUITABLE FOR SURFACEMOUNTING TO SIDEWALL, GYPSUM BOARD CEILINGS, OR CEILING TILES. REGISTER DESIGNATION INDICATES GRILLE TO BE PROVIDED WITH OPPOSED BLADE DAMPER. SIZE AS INDICATED. FOR LAY-IN INSTALLATION, PROVIDE LAY-IN BORDER FRAME AND PROVIDE FILLER PANEL FOR CEILING TILE LOCATION. NOISE CRITERIA SHALL BE LIMITED TO 20 NC. PRESSURE DROP SHALL BE LIMITED TO 0.1".
SUPPLY REGISTER (SAR) OR SIDEWALL SUPPLY REGISTER (SWR)	ALUMINUM SUPPLY REGISTER. PROVIDE WITH OPPOSED BLADE DAMPER. SIZE AND AIRFLOW AS INDICATED. FOR LAY-IN INSTALLATION, PROVIDE LAY-IN BORDER FRAME AND PROVIDE FILLER PANEL FOR CEILING TILE LOCATION. NOISE CRITERIA SHALL BE LIMITED TO 20 NC. PRESSURE DROP SHALL BE LIMITED TO 0.1".
EGGCRATE RETURN GRILLE (EC)	EGGCRATE GRILLE WITH 13x13x13 (1/2"x1/2"x1/2") CORE. SIZE AS INDICATED FOR LAY-IN INSTALLATION, PROVIDE LAY-IN BORDER FRAME AND PROVIDE FILLER PANEL FOR CEILING TILE LOCATION.
OUTSIDE AIR LOUVER (OAL)	OUTSIDE AIR LOUVER, FLORIDA PRODUCT APPROVED, DRAINABLE BLADE LOUVER; ALUMINUM CONSTRUCTION WITH CLEAR ANODIZED FINISH(COORDINATE COLOR WITH OWNER); DRAINABLE AND WIND BLOWN RAIN RESISTANT, 57% FREE AREA, PROVIDED WITH INSECT SCREEN. LOUVER SIZE AS INDICATED (FACE AREA).

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A	07/17/2023
B	10/02/2023
C	10/27/2023
D	04/19/2024

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DRAWN BY: Norris McMahon
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PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100719

ALABAMA LICENSED No. 30208 PROFESSIONAL ENGINEER JOHN PAUL GIBBS

SHEET TITLE
HVAC LEGEND AND GENERAL NOTES

SHEET NUMBER
M001

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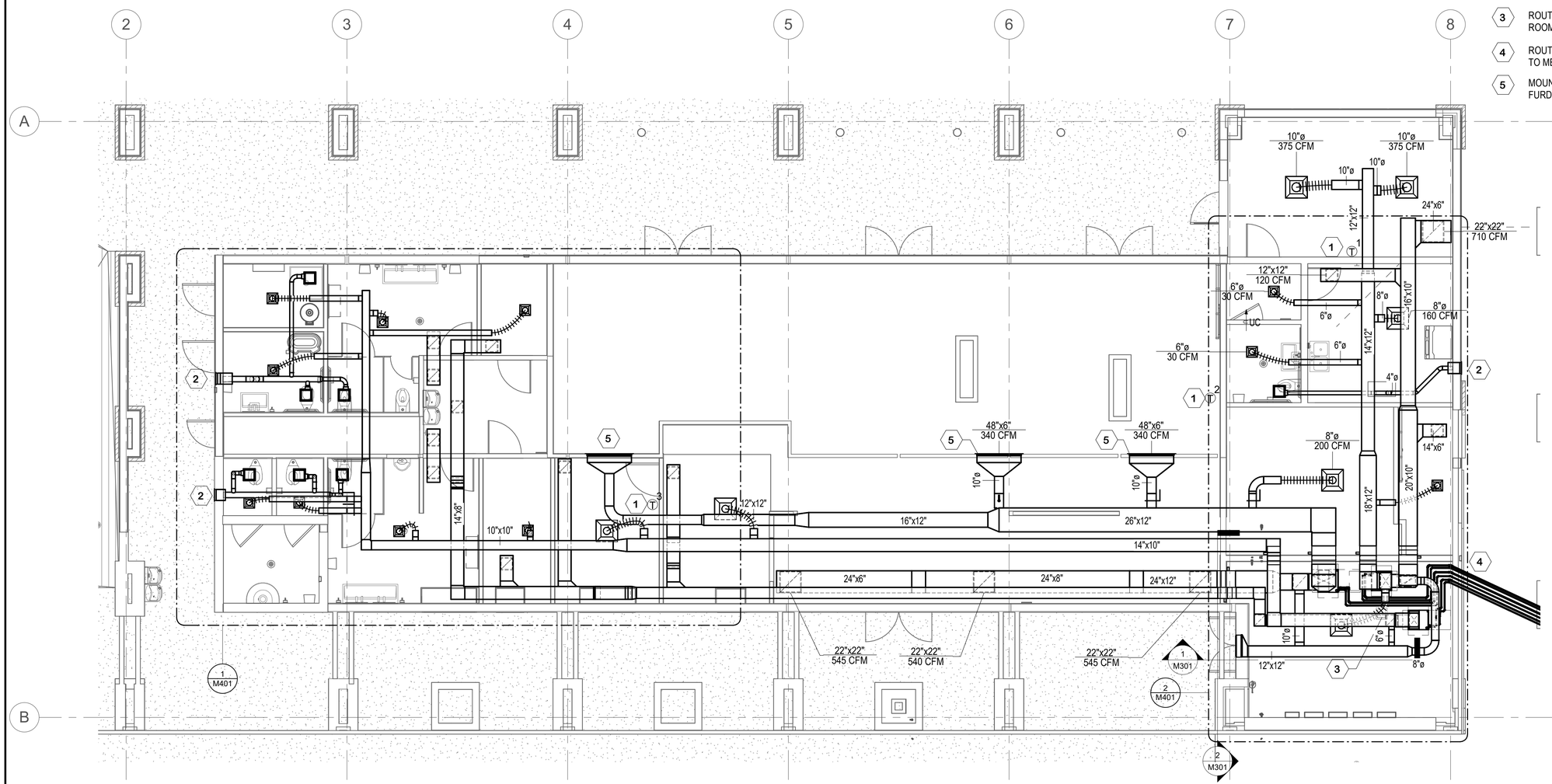
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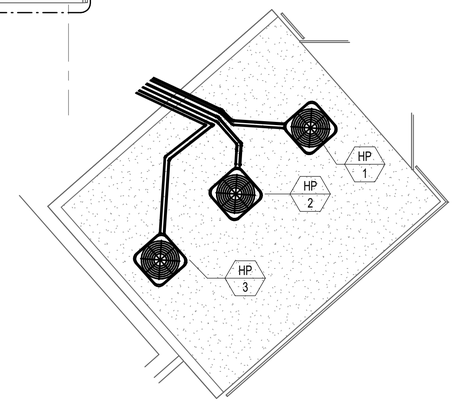
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SHEET NOTES

1. THERMOSTAT FOR SPLIT SYSTEM UNITS. MOUNT @ 4'6" AFF.
2. CEILING MOUNTED EXHAUST FAN. ROUTE DUCT TO BRICK VENT.
3. ROUTE CONDENSATE TO FLOOR SINK IN MECHANICAL ROOM.
4. ROUTE REFRIGERANT LINES FROM MECHANICAL YARD TO MECHANICAL ROOM. SEE DETAIL 1 ON SHEET M-501.
5. MOUNT SLOT DIFFUSERS AT 12" FROM BOTTOM OF FURDOWN.



1 M101 **HVAC PLAN**
Scale: 3/16" = 1'-0"



3 M101 **MECHANICAL YARD**
Scale: 3/16" = 1'-0"

TRUE NORTH
PROJECT NORTH
4' 2' 0' 4' 8'

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REV	DATE	REVISIONS DESCRIPTION
A	07/17/2023	90% Submission
B	10/02/2023	90% Submission
C	10/27/2023	100% Submission

DATE: 10/27/23
DESIGNED BY: John P. Gibbs
DRAWN BY: Norris McMahon
CHECKED BY: John P. Gibbs
PROFESSION: MECHANICAL
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100719

ALABAMA LICENSED No. 30208 PROFESSIONAL ENGINEER JOHN PAUL GIBBS

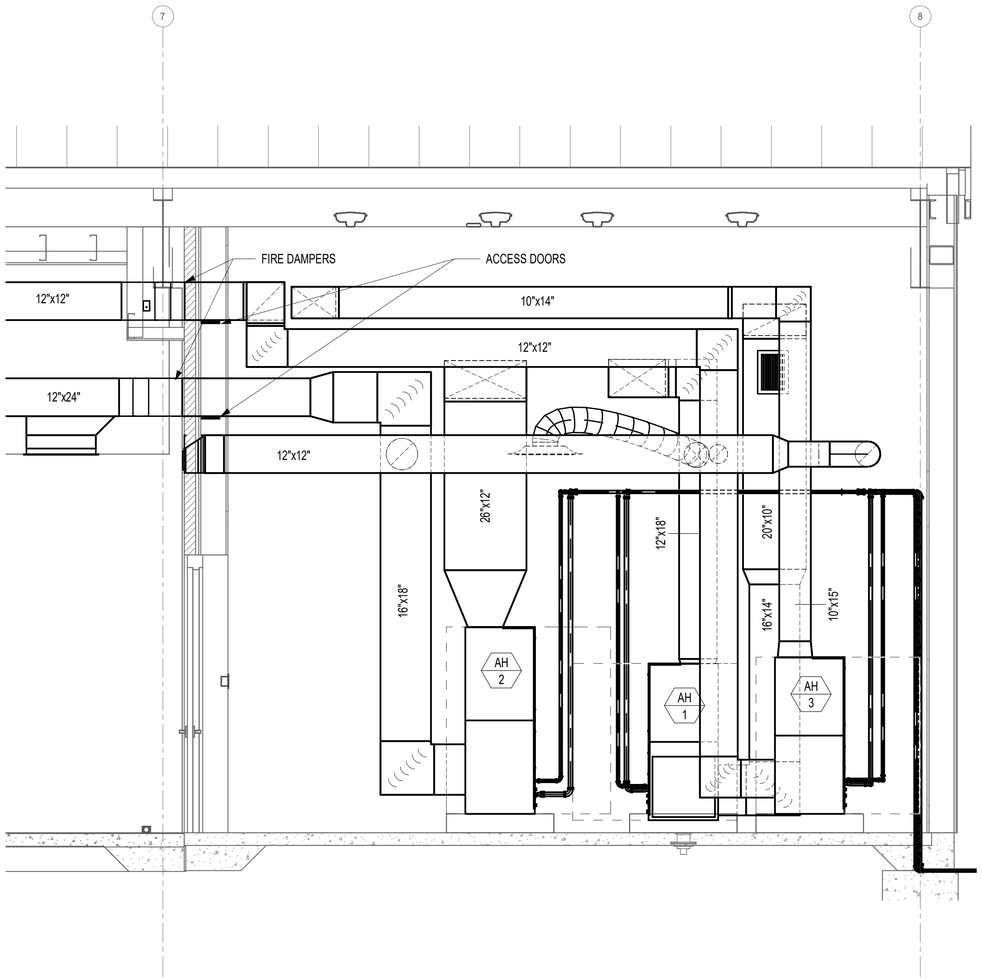
SHEET TITLE
HVAC FIRST FLOOR PLAN

SHEET NUMBER:
M101

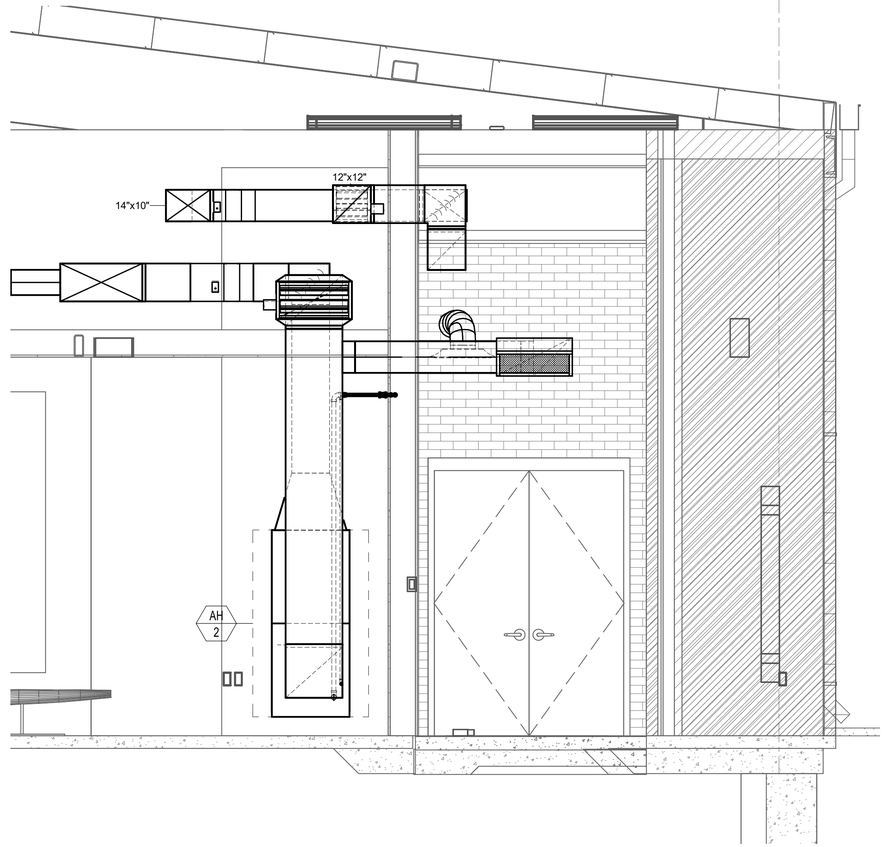
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1 / M301 **MECHANICAL ROOM SECTION**
Scale: 1/2" = 1'-0"



2 / M301 **WALL PENETRATION SECTION**
Scale: 1/2" = 1'-0"

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SHEET TITLE
HVAC SECTIONS

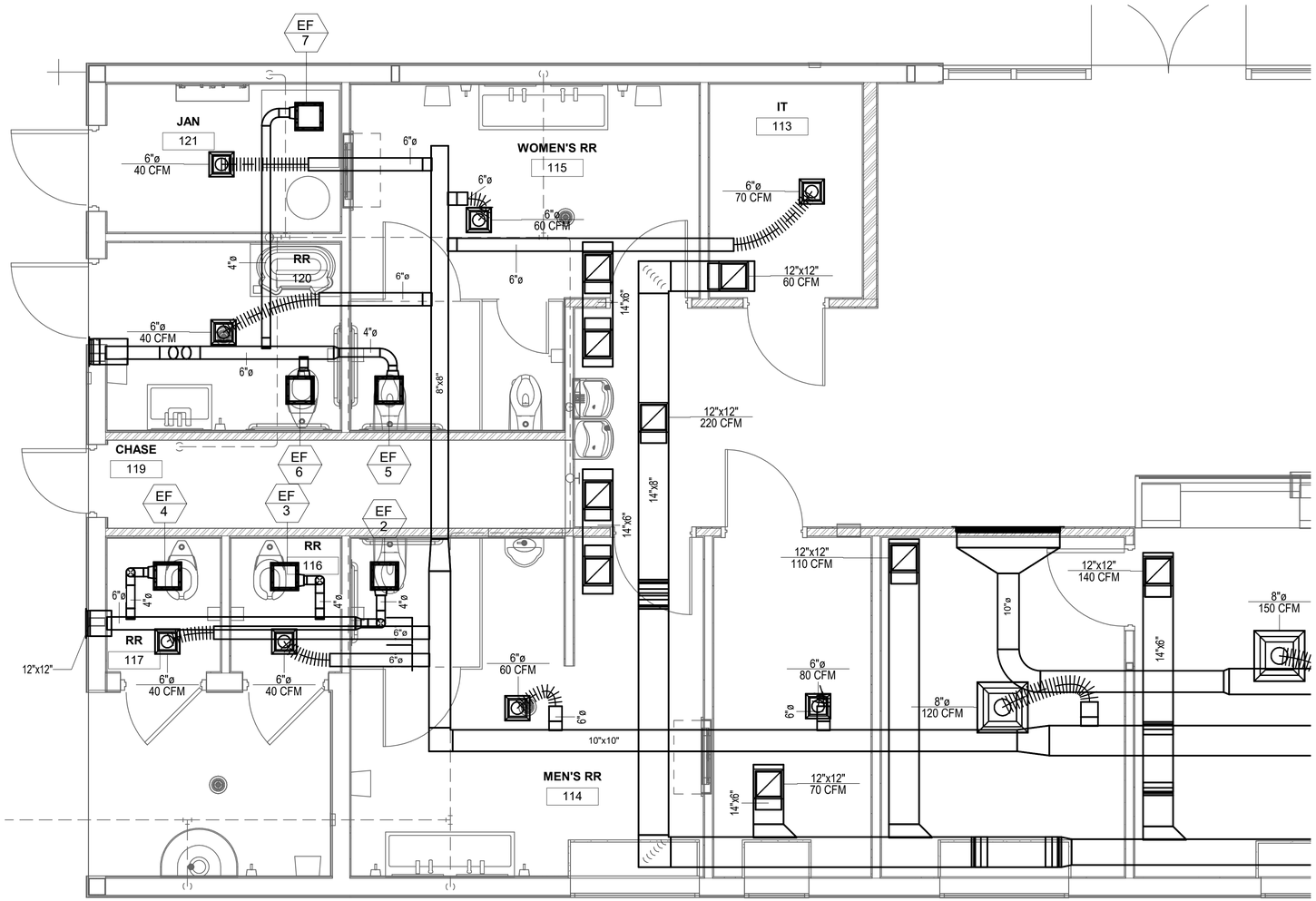
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M301

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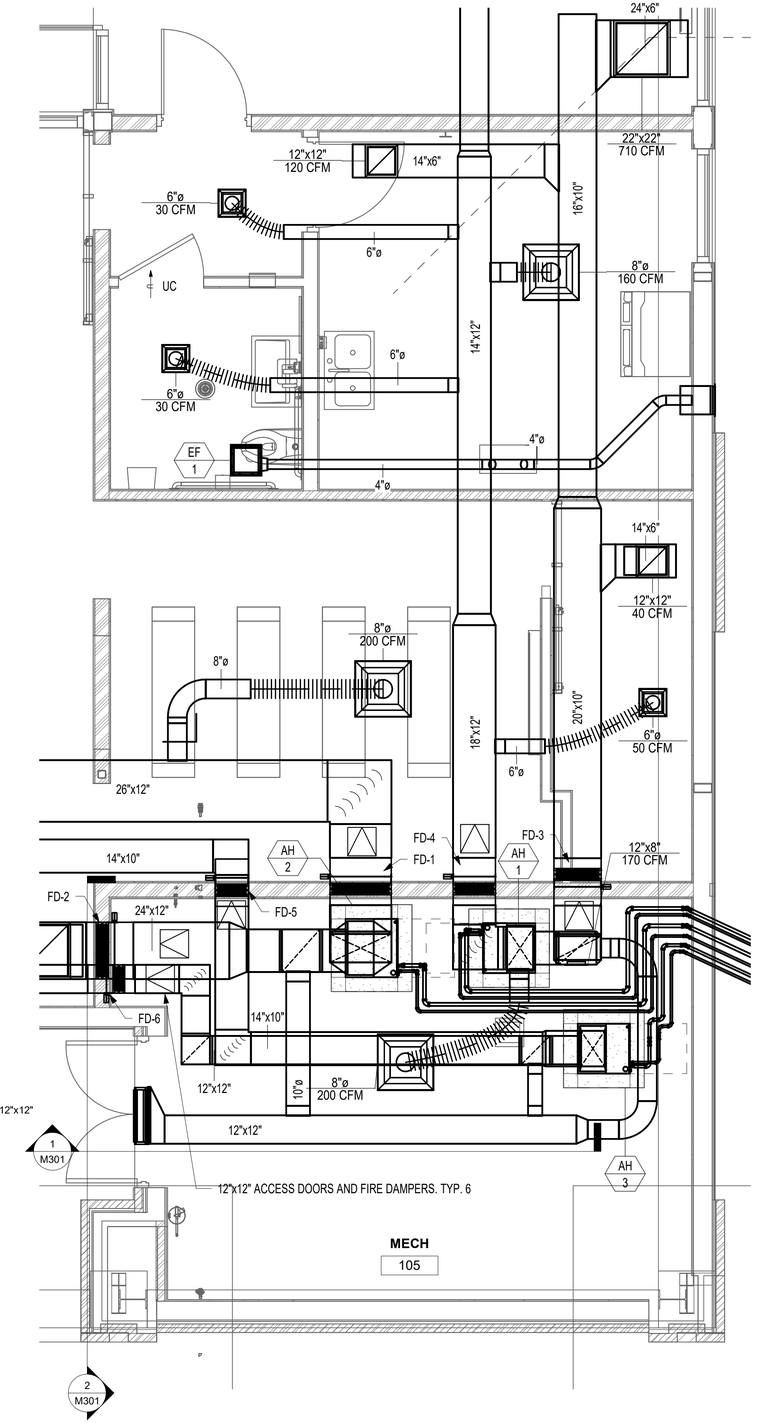
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1 M401 MECHANICAL ENLARGED RESTROOMS

Scale: 3/8" = 1'-0"



2 M401 MECHANICAL ENLARGED MECHANICAL ROOM

Scale: 3/8" = 1'-0"

TRUE NORTH PROJECT NORTH

2' 1' 0' 2' 4'

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ALABAMA LICENSED No. 30208 PROFESSIONAL ENGINEER JOHN PAUL GIBBS

SHEET TITLE
HVAC ENLARGED PLANS

SHEET NUMBER
M401

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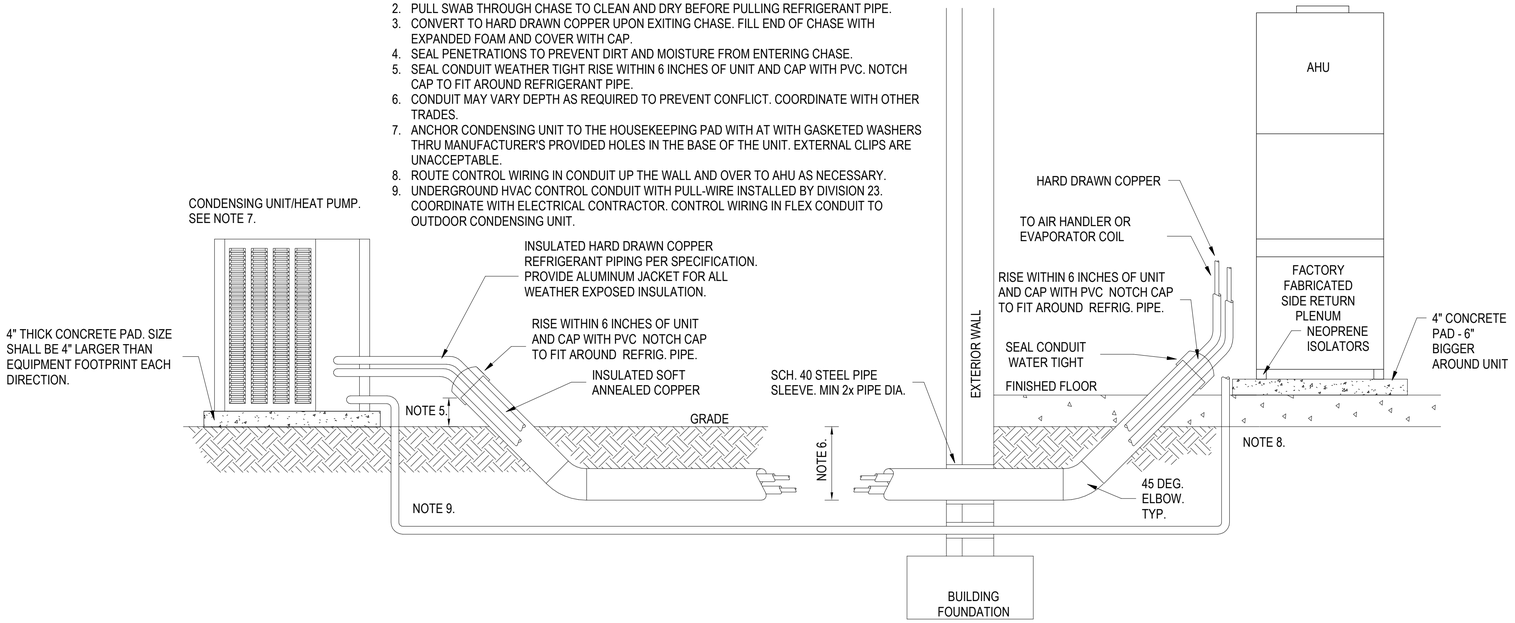
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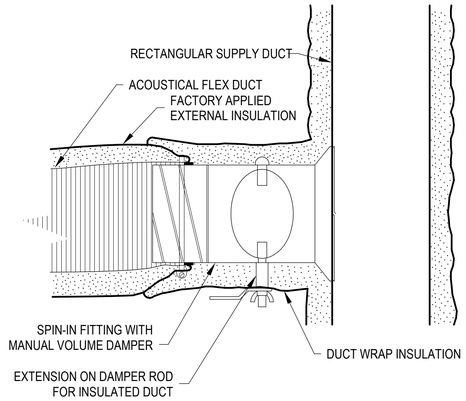
UNDERGROUND REFRIGERANT PIPING NOTES:

1. ONCE CHASE IS INSTALLED TEMPORARILY COVER WITH CAPS UNDERGROUND PIPE CHASE MUST REMAIN CLEAR OF DIRT, WATER AND CONSTUCTION DEBRIS.
2. PULL SWAB THROUGH CHASE TO CLEAN AND DRY BEFORE PULLING REFRIGERANT PIPE.
3. CONVERT TO HARD DRAWN COPPER UPON EXITING CHASE. FILL END OF CHASE WITH EXPANDED FOAM AND COVER WITH CAP.
4. SEAL PENETRATIONS TO PREVENT DIRT AND MOISTURE FROM ENTERING CHASE.
5. SEAL CONDUIT WEATHER TIGHT RISE WITHIN 6 INCHES OF UNIT AND CAP WITH PVC. NOTCH CAP TO FIT AROUND REFRIGERANT PIPE.
6. CONDUIT MAY VARY DEPTH AS REQUIRED TO PREVENT CONFLICT. COORDINATE WITH OTHER TRADES.
7. ANCHOR CONDENSING UNIT TO THE HOUSEKEEPING PAD WITH AT WITH GASKETED WASHERS THRU MANUFACTURER'S PROVIDED HOLES IN THE BASE OF THE UNIT. EXTERNAL CLIPS ARE UNACCEPTABLE.
8. ROUTE CONTROL WIRING IN CONDUIT UP THE WALL AND OVER TO AHU AS NECESSARY.
9. UNDERGROUND HVAC CONTROL CONDUIT WITH PULL-WIRE INSTALLED BY DIVISION 23. COORDINATE WITH ELECTRICAL CONTRACTOR. CONTROL WIRING IN FLEX CONDUIT TO OUTDOOR CONDENSING UNIT.



1 UNDERGROUND REFRIGERANT LINE CONDUIT ROUTING DETAIL

NOT TO SCALE

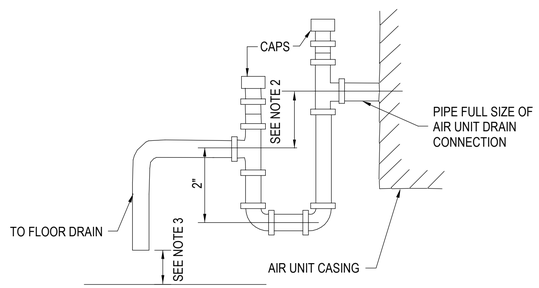


NOTES:

1. CONNECT FLEXIBLE DUCT TO FITTING WITH PANDIUT STRAP AND SEAL.
2. HARD DUCT RUNOUTS SHOULD START WITH SPIN-IN FITTINGS SIMILAR TO THIS DETAIL.

2 FLEX DUCT TAKEOFF DETAIL

NOT TO SCALE

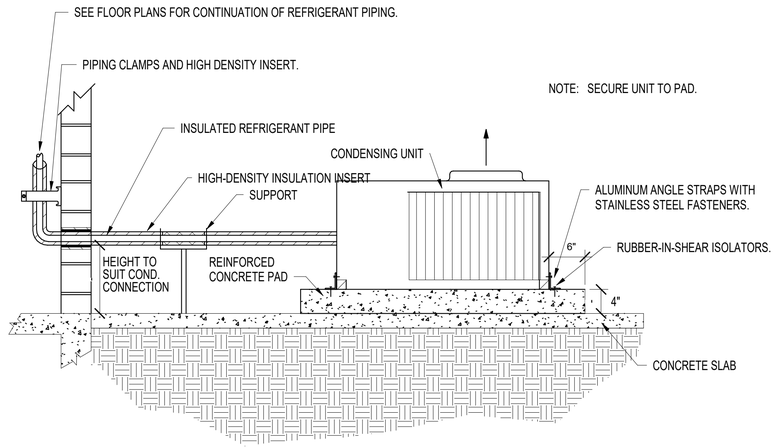


NOTES:

1. LOCATE TRAPS AND FLOOR DRAIN SO AS TO BE ACCESSIBLE FOR CLEANING.
2. HEIGHT SHALL BE EQUAL TO AIR UNIT TOTAL STATIC PRESSURE. PLUS ONE.
3. PROVIDE AIR GAP BETWEEN FLOOR DRAIN AND CONDENSATE DRAIN EQUAL TO TWO TIMES THE DRAIN DIAMETER.

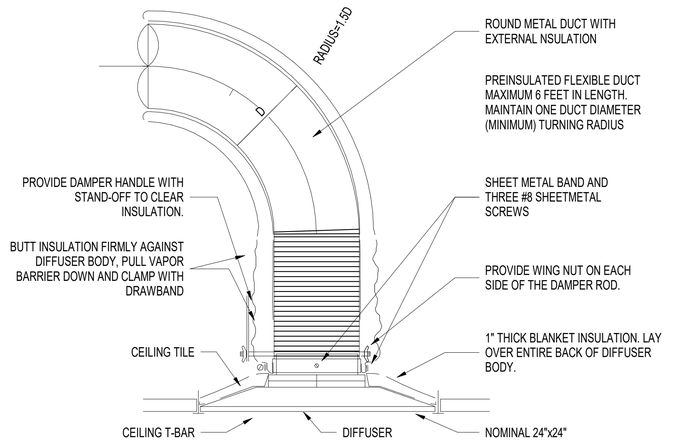
3 CONDENSATE DRAIN TRAP

NOT TO SCALE



4 OUTDOOR UNIT MOUNTING

NOT TO SCALE



5 CEILING DIFFUSER DETAIL

NOT TO SCALE

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ALABAMA LICENSED No. 30208 PROFESSIONAL ENGINEER JOHN PAUL GIBBS

SHEET TITLE

HVAC DETAILS

SHEET NUMBER.

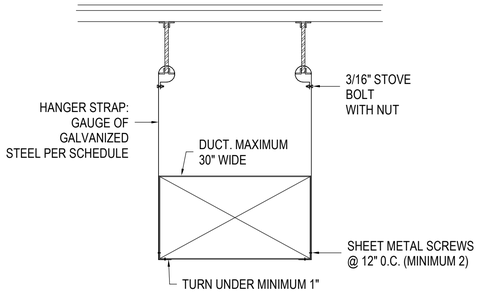
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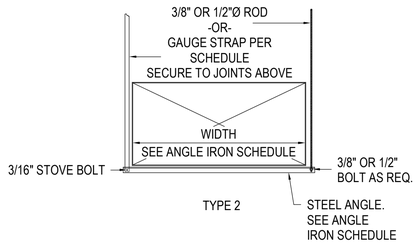
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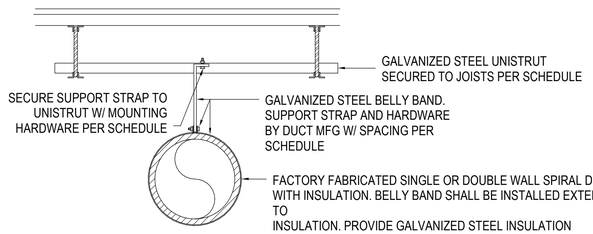


TYPE 2

ANGLE IRON SCHEDULE	
WIDTH	ANGLE SIZE
31" THRU 42"	1-1/2" x 1-1/2" x 1/8"
43" THRU 60"	1-1/2" x 1-1/2" x 1/8"
61" THRU 84"	2" x 2" x 1/4"
85" & OVER	2" x 2" x 1/4"

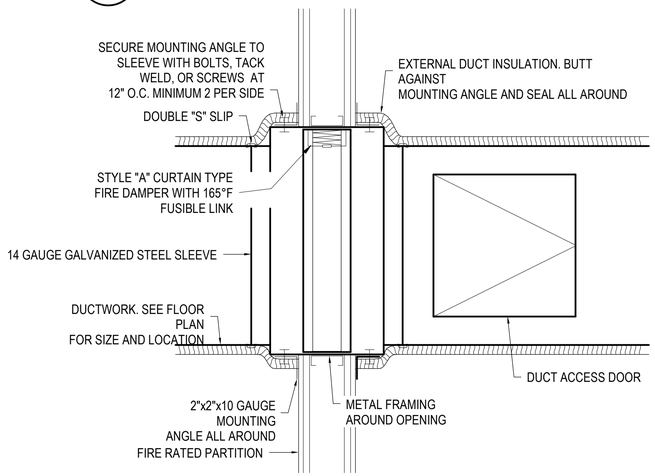
A/C DUCT SCHEDULE				
1/2" DUCT PERIMETER (P/2)	GAUGE	HANGERS	MAXIMUM HANGER SPACING	JOINTS
30"	26	1"-22 GAUGE	10'-0" (TYPE 1)	FLAT "S" & DRIVE SLIP
72"	24	1"-18 GAUGE	10'-0" (TYPE 1)	STANDING "S"
96"	22	1"-16 GAUGE OR 1/2" ROD	10'-0" (TYPE 2)	STANDING "S"
120"	20	1.5"-18 GAUGE OR 1/2" ROD	10'-0" (TYPE 2)	STANDING "SR"
168"	18	1.5"-16 GAUGE OR 1/2" ROD	10'-0" (TYPE 2)	STANDING "SR"

NOTES:
1. WHERE SCHEDULE CONFLICTS WITH MORE STRINGENT SMACNA DUCT CONSTRUCTION STANDARD, SMACNA SHALL BE USED.
2. UTILIZE RECTANGULAR DUCT INSTALLATION INSTRUCTIONS FOR FLAT OVAL DUCTWORK.



1 DUCT SUPPORT DETAIL

NOT TO SCALE

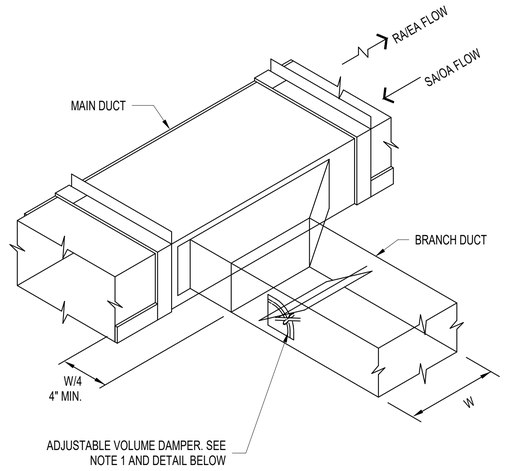


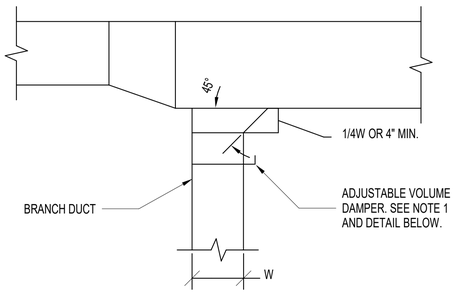
NOTE:
1. OPENING IN WALL SHALL BE MINIMUM 1/8" PER FOOT LARGER THAN OVERALL SIZE OF DAMPER AND SLEEVE ASSEMBLY. MAXIMUM OPENING SHALL NOT EXCEED 1/8" PER FOOT PLUS ONE INCH. OPENING SHALL NOT BE LESS THAN 1/4" LARGER FOR ANY SIZE DAMPER AND SLEEVE ASSEMBLY.

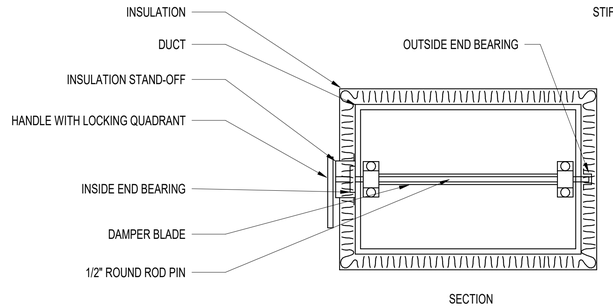
3 TYPE A - FIRE DAMPER IN WALL INSTALLATION DETAIL

D

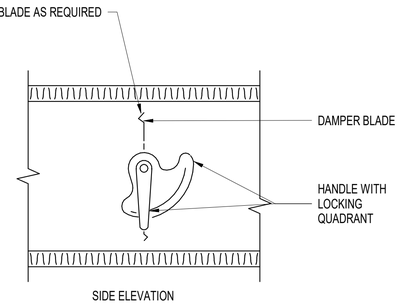
FIRE DAMPER SCHEDULE					
	DUCT SIZE		DAMPER SIZE		STYLE
	"W"	"H"	"W"	"H"	"A", "B", OR "C"
FD-1	26	12	26	12	"A"
FD-2	24	12	24	12	"A"
FD-3	20	10	20	10	"A"
FD-4	18	12	18	12	"A"
FD-5	14	10	14	10	"A"
FD-6	12	12	12	12	"A"







SECTION



SIDE ELEVATION

NOTES:
1. PROVIDE ADJUSTABLE VOLUME DAMPER WITH POSITIONING LEVER, EXTENSION SECTION (INSULATED DUCT ONLY) AND LOCKING WING NUT. VOLUME DAMPER SHALL BE SINGLE BLADE OR MULTI-BLADE DEPENDING ON DUCT SIZE.
2. DELETE INSULATION STAND-OFF ON DUCTWORK WITHOUT EXTERIOR INSULATION.
3. DETAIL SHOWS SINGLE BLADE DAMPER. DAMPER INSTALLATION SHALL BE SIMILAR FOR MULTI-BLADE DAMPERS & ROUND DAMPERS.

2 BRANCH DUCT TAKEOFF AND VOLUME DAMPER DETAIL

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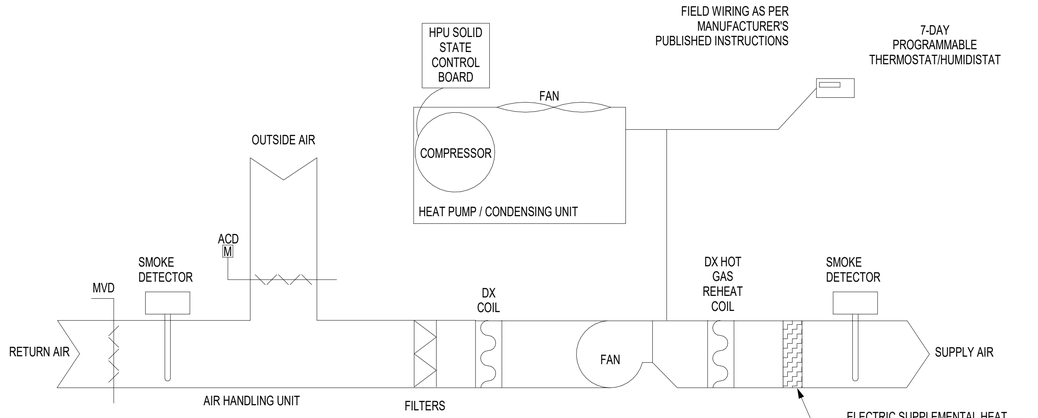
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1 SPLIT SYSTEM AC DDC

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SEQUENCE OF OPERATION - SPLIT SYSTEM AHU/HPU

HEAT PUMP UNIT NOTES:
THERMOSTAT:

1. PROVIDE 7-DAY PROGRAMMABLE THERMOSTAT/HUMIDISTAT WITH OFF/AUTO/FAN SWITCHING CAPABILITY. IN THE OFF POSITION,NEITHER THE AIR HANDLING UNIT NOR THE HEAT PUMP CONDENSING UNIT SHALL RUN. IN THE AUTO POSITION, THE AIR HANDLING UNIT FAN AND STAGES OF HEATING/COOLING SHALL BE CYCLED BY THE THERMOSTAT.

2. PROVIDE FACTORY MOUNTED FIRE STATS TO SHUT DOWN UNITS UPON DETECTION OF EXCESSIVE HEAT IN THE DISCHARGE OF THE AIR HANDLING UNIT.

3. FOR UNITS WITH A CAPACITY OF 2,000 CFM OR GREATER, PROVIDE AUTOMATIC FAN SHUTDOWN BY MEANS OF A UL APPROVED SMOKE DETECTOR. FOR UNITS WITH A CAPACITY OF LESS THAN 2,000 CFM SERVING A MEANS OF EGRESS, PROVIDE AUTOMATIC FAN SHUTDOWN.

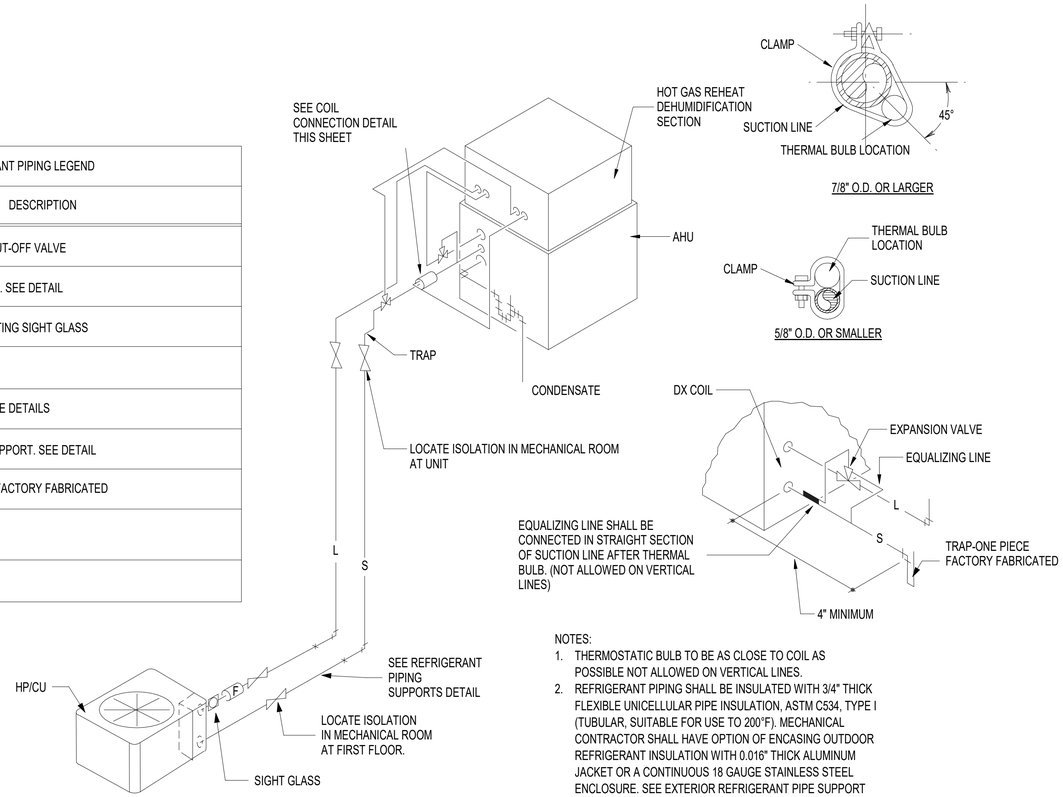
SEQUENCE OF OPERATION:
COOLING:
WHEN THE SPACE TEMPERATURE RISES ABOVE THE COOLING SET POINT DEAD BAND AS DETECTED BY THE SPACE THERMOSTAT, THE STAGES OF DX COOLING SHALL BE CYCLED AS REQUIRED TO MAINTAIN SPACE TEMPERATURE AT THE THERMOSTAT SET POINT.

HEATING:
WHEN THE SPACE TEMPERATURE DROPS BELOW THE HEATING SET POINT DEAD BAND AS DETECTED BY THE SPACE THERMOSTAT, THE OUTDOOR UNIT REVERSING VALVE SHALL REVERSE AND THE STAGES OF HEATING SHALL BE CYCLED AS REQUIRED TO MAINTAIN SPACE TEMPERATURE AT THERMOSTAT SET POINT. IF REVERSE CYCLE HEATING IS INSUFFICIENT TO MAINTAIN SPACE TEMPERATURE, THE STAGES OF ELECTRICAL SUPPLEMENTAL HEATING SHALL BE CYCLED AS REQUIRED TO MAINTAIN SPACE TEMPERATURE AT THE THERMOSTAT SET POINT. IF THE UNIT DEFROST CYCLE ACTIVATES WHILE THE UNIT IS IN THE HEATING MODE, THE THERMOSTAT SHALL CYCLE THE ELECTRIC STRIP HEAT TO SATISFY THE SPACE HEATING REQUIREMENTS.

UNOCCUPIED MODE:
EACH AHU OUTSIDE AIR DAMPER SHALL CLOSE, AND THE AHU'S FAN AND COMPRESSOR SHALL CYCLE TO MAINTAIN A HI/LOW LIMIT SET POINT TEMPERATURE. THE SET POINT FOR COOLING SHALL BE 80°F ADJUSTABLE. THE SET POINT FOR HEATING SHALL BE 65°F, ADJUSTABLE.

SPACE DEHUMIDIFICATION:
WHEN THE BUILDING IS IN EITHER THE "OCCUPIED" OR "UNOCCUPIED" MODE AND THE RELATIVE HUMIDITY IN ANY SPACE RISES ABOVE SET POINT (ADJUSTABLE), THEN THE CONTROLS SHALL BE OVERRIDDEN AND THE HPU'S SHALL BE ENERGIZED. THE DX COOLING COIL SHALL BE CYCLED AS REQUIRED TO MAINTAIN 55°F LEAVING AIR TEMPERATURE. TO PREVENT SPACE OVERCOOLING, THE HOT GAS REHEAT COIL SHALL MODULATE TO MAINTAIN 70° F LEAVING AIR TEMPERATURE TO SATISFY THE SPACE HUMIDITY SENSOR. IF THE SPACE TEMPERATURE CONTINUED TO DROP, THE ELECTRIC HEATING COIL SHALL MODULATE TO SATISFY THE ZONE TEMPERATURE SET POINT UNTIL THE ZONE RELATIVE HUMIDITY IS SATISFIED.

REFRIGERANT PIPING LEGEND	
SYMBOL	DESCRIPTION
	REFRIGERANT SHUT-OFF VALVE
	EXPANSION VALVE. SEE DETAIL
	MOISTURE INDICATING SIGHT GLASS
F	FILTER DRYER
	PIPE SUPPORT. SEE DETAILS
	EXTERIOR PIPE SUPPORT. SEE DETAIL
	TRAP. ONE PIECE FACTORY FABRICATED
S	SUCTION LINE
L	LIQUID LINE



NOTES:

1. THERMOSTATIC BULB TO BE AS CLOSE TO COIL AS POSSIBLE NOT ALLOWED ON VERTICAL LINES.
2. REFRIGERANT PIPING SHALL BE INSULATED WITH 3/4" THICK FLEXIBLE UNICELLULAR PIPE INSULATION, ASTM C534, TYPE I (TUBULAR, SUITABLE FOR USE TO 200°F). MECHANICAL CONTRACTOR SHALL HAVE OPTION OF ENCASING OUTDOOR REFRIGERANT INSULATION WITH 0.016" THICK ALUMINUM JACKET OR A CONTINUOUS 18 GAUGE STAINLESS STEEL ENCLOSURE. SEE EXTERIOR REFRIGERANT PIPE SUPPORT DETAIL.

2 DX SPLIT SYSTEM WITH HGRH (AHU/HPU) REFRIGERANT PIPING SCHEMATIC AND COIL CONNECTION

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REV	DATE	REVISIONS DESCRIPTION
		30% Submission
A	07/17/2023	90% Submission
B	10/02/2023	100% Submission
C	10/27/2023	

DATE: 10/27/23
DESIGNED BY: John P. Gibbs
DRAWN BY: Norris McMahon
CHECKED BY: John P. Gibbs
PROFESSION: MECHANICAL
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100719

ALABAMA LICENSED No. 30208 PROFESSIONAL ENGINEER JOHN PAUL GIBBS

SHEET TITLE
HVAC DETAILS

SHEET NUMBER:
M503

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SPLIT SYSTEM DX HEAT PUMP SCHEDULE

AIR HANDLER (INSIDE UNIT)																					HEAT PUMP (OUTSIDE UNIT)						
		AIRFLOW			COIL COOLING PERFORMANCE								HGRH PERFORMANCE			HEATING PERFORMANCE			AH ELECTRICAL				AMBIENT TEMP.			HP ELECTRICAL		
					EAT		LAT															SUMMER		DB WINTER			
TYPE	MARK	AIRFLOW (CFM)	OUTSIDE AIR (CFM)	ESP (IN W.G.)	EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)	COOLING CAPACITY(MBH)	SENSIBLE CAPACITY(MBH)	MAX FACE VELOCITY (FPM)	EER (MIN.)	EAT DB (°F)	LAT DB (°F)	TOTAL CAPACITY (MBH)	HEATING EAT (°F)	HEATING LAT (°F)	MIN. STRIP HEAT CAPACITY (KW)	BLOWER MOTOR (HP)	MCA/MOCP	V / Φ / Hz	MARK	DB (°F)	WB (°F)	(°F)	MCA/MOCP	V / Φ / Hz	NOTES
AH	1	1220	180	0.5	77.9	64.5	55.0	54.0	32.4	26.4	500	14.3	55	75	26.5	65	85	7.8	1/3	55 / 60	240/1/60	HP-1	92.2	78.0	29.1	18 / 30	240/1/60	1-9
AH	2	1900	270	0.5	78.6	65.3	55.0	54.0	60.0	45.9	500	14.3	55	75	41.2	65	85	12.1	3/4	(59 / 60) / (50 / 50)	240/1/60	HP-3	92.2	78.0	29.1	32 / 50	240/1/60	1-10
AH	3	700	100	0.5	77.0	64.0	55.0	54.0	14.6	13.0	500	14.3	55	75	15.2	65	85	4.5	1/4	28 / 30	240/1/60	HP-3	92.2	78.0	29.1	15 / 25	240/1/60	1-9

SSDX NOTES:
1. EXTERNAL STATIC PRESSURE (ESP) DOES NOT INCLUDE PRESURE DROP THROUGH COILS, DUCT HEATER OR FILTERS.
2. INSTALL UNIT IN STRICT ACCORDANCE WITH THE MFR'S PRINTED INSTRUCTIONS AND APPLICABLE CODES AND STANDARDS.
3. PROVIDE 5-YEAR MANUFACTURER'S WARRANTY.
4. PROVIDE FACTORY MOUNTED FIRE STATS TO SHUT UNIT DOWN UPON DETECTION OF EXCESSIVE HEAT IN THE SUPPLY SIDE DISCHARGE OF UNIT.
5. PROVIDE SCR ELECTRIC DUCT HEATER.
6. COORDINATE POWER REQUIREMENTS WITH ELECTRICAL.
7. PROVIDE WITH MCDANELS LABOR SAVER FILTER HOUSING.
8. PROVIDE 2" PLEATED FILTER. MAXIMUM FILTER VELOCITY EQUAL TO 360 FPM.
9. PROVIDE AHU WITH HOT GAS REHEAT AND COMPLETE DEHUMIDIFICATION MODE SEQUENCE.
10. AIR HANDLING UNIT REQUIRES DUAL ELECTRICAL CIRCUITS. ONE FOR FIRST STAGE OF ELECTRIC HEAT AND FAN AND SECOND ONE FOR SECOND STAGE OF ELECTRIC HEAT.

EXHAUST FAN SCHEDULE

TYPE	MARK	SERVING LOCATION(S)	TYPE	DRIVE	AIRFLOW (CFM)	STATIC PRESSURE	MAX. RPM	MAX. SONES	MIN. HP (W)	V / Φ / Hz	NOTES
EF	1	123	CEF	DD	50	0.125	675	1.4	(17.1)	120/1/60	2,3,4,5
EF	2	114	CEF	DD	100	0.125	950	2.0	(80.2)	120/1/60	2,3,4,5
EF	3	116	CEF	DD	50	0.125	675	1.4	(17.1)	120/1/60	2,3,4,5
EF	4	117	CEF	DD	50	0.125	675	1.4	(17.1)	120/1/60	2,3,4,5
EF	5	115	CEF	DD	100	0.125	950	2.0	(80.2)	120/1/60	2,3,4,5
EF	6	120	CEF	DD	50	0.125	675	1.4	(17.1)	120/1/60	2,3,4,5
EF	7	121	CEF	DD	70	0.250	675	0.9	(17.1)	120/1/60	2,3,4,5

EF NOTES:
1. CEF - CEILING EXHAUST FAN; ICF - INLINE CABINET FAN; SF - FILTERED KITCHEN SUPPLY FAN; UB - UPBLAST CENTRIFUGAL EXHAUST FAN; DD - DIRECT DRIVE; BD - BELT DRIVE
2. PROVIDE FANS WITH SPEED CONTROLLER FOR AIR FLOW BALANCING. MOUNT CONTROLLER WITHIN FAN HOUSING.
3. INTERLOCK WITH OCCUPANCY SENSOR WALL SWITCH INCLUDING TIME DELAY.
4. PROVIDE FAN WITH AN INTEGRAL DISCONNECT.
5. PROVIDE WITH GRAVITY BACKDRAFT DAMPER.

DESIGN CONDITIONS

CONDITIONED OCCUPIABLE SPACES	OUTSIDE		INSIDE	
	DB (°F)	MCWB (°F)	DB (°F)	RH
SUMMER	92.2	78.0	72.0	50%
WINTER	29.1	-	68.0	-
DEHUMIDIFICATION CONDITIONS	84.7 MCDB	79.5 DP		

NOTES:
1. INSIDE SUMMER DESIGN TEMPERATUREIS +0/-2 °F.
2. INSIDE SUMMER DESIGN RELATIVE HUMIDITY IS +10%.
3. INSIDE WINTER DESIGN TEMPERATUREIS +2/-0 °F.
4. COMFORT COOLING DESIGN CONDITIONS ARE BASED OFF OF 0.4% ASHRAE WEATHER DATA.
5. COMFORT HEATING DESIGN CONDITIONS ARE BASED OFF OF 99.6% ASHRAE WEATHER DATA.
6. DEHUMIDIFICATION DESIGN CONDITIONS ARE BASED OFF OF 0.4% ASHRAE WEATHER DATA.

COMMUNICATIONS / IT ROOMS	OUTSIDE		INSIDE	
	DB (°F)	WB (°F)	DB (°F)	RH
SUMMER	92.2	78.0	70.0	50%
WINTER	29.1	-	68.0	-

NOTES:
1. INSIDE SUMMER DESIGN TEMPERATURE IS +0/-1 °F.
2. INSIDE SUMMER DESIGN RELATIVE HUMIDITY IS +/-5%.
3. INSIDE WINTER DESIGN TEMPERATURE IS +1/-0 °F.

HEATED AND VENTILATED ONLY SPACES	OUTSIDE		INSIDE	
	DB (°F)	WB (°F)	DB (°F)	RH
SUMMER	92.2	78.0	NOTE 1	-
WINTER	29.1	-	55.0	-

NOTES:
1. INSIDE SUMMER DESIGN TEMPERATURE 10°F BELOW AMBIENT.

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ALABAMA LICENSED No. 30208 PROFESSIONAL ENGINEER JOHN PAUL GIBBS

SHEET TITLE
HVAC SCHEDULES

SHEET NUMBER.
M601

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PLUMBING LEGEND

- ELBOW TURN UP
- ELBOW TURN DOWN
- CONNECTION, BOTTOM
- CONNECTION, TOP
- PIPE SIZE TRANSITION
- GATE VALVE
- BALL VALVE
- BUTTERFLY VALVE
- SWING CHECK VALVE
- SPRING CHECK VALVE
- PRV — PRESSURE REDUCING VALVE
- PRESSURE RELIEF VALVE. PIPE FULL SIZE DISCHARGE TO FLOOR DRAIN.
- UNION
- GLOBE VALVE
- THERMAL EXPANSION VALVE
- ANGLE VALVE
- SOLENOID VALVE
- FLEXIBLE PIPE CONNECTOR
- GAS COCK
- STRAINER WITH BLOW DOWN GATE VALVE FULL SIZE OF STRAINER AND 3/4" HOSE END CONNECTION WITH CAP
- A — COMPRESSED AIR DROP
- A — COMPRESSED AIR DROP WITH REEL
- M — WATER METER
- PRESSURE GAUGE
- TEMPERATURE GAUGE

- SANITARY PIPING
- VENT PIPING
- COLD WATER SUPPLY PIPING
- HOT WATER SUPPLY PIPING
- HOT WATER RECIRCULATION PIPING
- COMPRESSED AIR PIPING
- AW — ACID WASTE PIPING
- AV — ACID VENT PIPING
- G — GAS PIPING
- GW — GREASE WASTE PIPING
- HOSE BIBB
- CLEANOUT TO FLOOR
- FLOOR DRAIN
- CLEANOUT TO GRADE
- VENT THRU ROOF
- WATER HAMMER ARRESTOR
- WALL HYDRANT
- ROOF DRAIN
- EF 1 — EQUIPMENT TAG
- 1 DETAIL NOT TO SCALE — DRAWING DESCRIPTION
- 1 — SHEET NOTE
- POINT OF CONNECTION TO EXISTING OR EXTENT OF DEMOLITION
- FS / RTC — FLOOR SINK AND RUNNING TRAP/CLEANOUT
- MH — MANHOLE
- FLOOR SLAB REMOVAL
- WATER HAMMER ARRESTER

ABBREVIATIONS

AAV	AIR ADMITTANCE VALVE
ADA	AMERICANS WITH DISABILITIES ACT
AFF	ABOVE FINISH FLOOR
AGA	AMERICAN GAS ASSOCIATION
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ASSE	AMERICAN SOCIETY OF SANITARY ENGINEERING
BFP	BACKFLOW PREVENTER
CA	COMPRESSED AIR
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CFU	COLD WATER FIXTURE UNITS
CO	CLEANOUT
COBF	CLEANOUT BELOW FLOOR
CONC	CONCRETE
CW	COLD WATER
DCVA	DOUBLE CHECK VALVE ASSEMBLY
DF	DRINKING FOUNTAIN
DFU	DRAINAGE FIXTURE UNITS
DIA	DIAMETER
DN	DOWN
EL OR ELEV	ELEVATION
EWC	ELECTRICAL WATER COOLER
EPA	ENVIRONMENTAL PROTECTION AGENCY
EWH	ELECTRIC WATER HEATER
(E)	EXISTING
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FS	FLOW SWITCH
FT	FOOT OR FEET
FV	FLUSH VALVE
GALV	GALVANIZED
GCO	GRADE CLEANOUT
GI	GREASE INTERCEPTOR
GPF	GALLONS PER FLUSH
GPM	GALLONS PER MINUTE
GWH	GAS WATER HEATER
HB	HOSE BIBB
HC	HANDICAPPED
HD	HUB DRAIN
HFU	HOT WATER FIXTURE UNITS
HW	HOT WATER
HWR	HOT WATER RETURN
ID	INSIDE DIAMETER
INV	INVERT
IW	INDIRECT WASTE
MECH	MECHANICAL
NC	NORMALLY CLOSED
NG	NATURAL GAS
NO	NORMALLY OPEN
OD	OUTSIDE DIAMETER
OED	OPEN END DRAIN
PSI	POUNDS PER SQUARE INCH
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
S	SANITARY
SA	SHOCK ABSORBER
SH	SHOWER
SK	SINK
SS	SOIL STACK OR STAINLESS STEEL
TLT	TOILET
TS	TAMPER SWITCH
TW	TEMPERED WATER
TYP	TYPICAL
T&P	TEMPERATURE AND PRESSURE
U	URINAL
V	VENT
VB	VACUUM BREAKER
VS	VENT STACK
VTR	VENT THROUGH ROOF
W	WASTE
W/	WITH
WC	WATER CLOSET (TOILET)
WCO	WALL CLEANOUT
WH	WALL HYDRANT
WHA	WATER HAMMER ARRESTOR
WS	WASTE STACK

PLUMBING NOTES

1. PLUMBING CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS, SIZES, AND CONNECTION LOCATIONS BEFORE ANY PIPE CUTTING IS COMMENCED.
2. THE PIPING SHOWN ON THESE DRAWINGS ARE DIAGRAMMATIC. CONTRACTOR SHALL ARRANGE WORK IN A NEAT AND ORDERLY MANNER. THE PLUMBING CONTRACTOR SHALL MAKE ANY OFFSETS, TRANSITIONS, AND OTHER MINOR ADJUSTMENTS AS REQUIRED FOR A COMPLETE AND WORKING SYSTEM INSTALLATION. COORDINATE ALL PIPING WITH DUCTWORK SHOP DRAWINGS. ROUTE PIPING AS REQUIRED TO AVOID CONFLICTS.
3. CONTRACTOR SHALL PROVIDE ALL TEMPORARY OR PERMANENT CAPS FOR PIPING. CONTRACTOR SHALL NOT LEAVE PIPING OPEN ENDED.
4. DRAWINGS SHOW GENERAL SIZE AND APPROXIMATE LOCATIONS. THE DRAWINGS ARE INTENDED TO SHOW THE GENERAL ARRANGEMENT OF THE UTILITY SYSTEM. THE CONTRACTOR SHALL FIELD VERIFY ALL UTILITY CONNECTIONS SIZE, LOCATION, DEPTH. THE CONTRACTOR SHALL INSTALL ALL SYSTEMS ACCORDING TO THE ACTUAL FIELD CONDITIONS FOUND. ANY PLUMBING SYSTEM COMPONENT INSTALLED INCORRECTLY DUE TO FIELD CONDITIONS SHALL BE REMOVED AND INSTALLED CORRECTLY AT THE EXPENSE OF THE CONTRACTOR.
5. REFER TO RISERS FOR SIZES NOT INDICATED ON PLAN VIEWS. RISERS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO INDICATE ALL OFFSETS, BENDS, FITTINGS, ETC.
6. CONTRACTOR SHALL PROVIDE ALL CONNECTIONS, FITTINGS, APPURTENANCES, ETC. AS NECESSARY FOR INSTALLATION AND OPERATION OF OWNER FURNISHED EQUIPMENT.
7. INSTALL ALL EQUIPMENT AND PIPING PER MANUFACTURERS REQUIREMENTS AND TO MANUFACTURERS RECOMMENDED CLEARANCES.
8. ALL TRAP PRIMERS AND DOMESTIC WATER ISOLATION VALVES SHALL BE ACCESSIBLE. ISOLATION VALVES SHALL BE OF THE QUARTER TURN BALL TYPE.
9. BALL VALVES SHALL BE PROVIDED ON ALL WATER BRANCH LINES TO ALL EQUIPMENT, HOSE BIBBS, AND RISER TAKE-OFFS.
10. THE CONTRACTOR SHALL NOT CUT ANY STRUCTURAL MEMBERS OF BUILDING WITHOUT PRIOR CONSENT OF ARCHITECT AND STRUCTURAL ENGINEER.
11. DO NOT MOUNT DISCONNECT SWITCHES ON PLUMBING EQUIPMENT EXCEPT AS RECOMMENDED BY MANUFACTURER.
12. PLUMBING CONTRACTOR TO COORDINATE WITH OTHER TRADES AS REQUIRED FOR INSTALLATION OF EQUIPMENT AND ANY OTHER PLUMBING ITEMS.
13. CONTRACTOR SHALL PROVIDE GENERAL WARRANTY FOR WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL COMPLETION.
14. PROVIDE ALL EQUIPMENT AND VALVES WITH 2 1/2"x4" ENGRAVED, LAMINATED PLASTIC EQUIPMENT MARKER FOR IDENTIFICATION PURPOSES.
15. PROVIDE ESCUTCHEON PLATES FOR ALL WALL PIPING PENETRATIONS.
16. CONTRACTOR SHALL PROVIDE ALL CONNECTIONS, FITTINGS, APPURTENANCES, ETC. AS NECESSARY FOR INSTALLATION AND OPERATION OF OWNER FURNISHED EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
17. COMPLY WITH SPECIFICATIONS FOR PIPE SLEEVES, HANGER SELECTIONS, AND APPLICATIONS.
18. PROVIDE 1/2" MINERAL FIBER INSULATION WITH VAPOR BARRIER AND ALL WEATHER JACKET FOR DOMESTIC COLD WATER PIPING. PROVIDE 18 GA. PROTECTION SADDLES BETWEEN INSULATION AND PIPE HANGERS. FOR EXPOSED COLD WATER PIPING, PROVIDE ALUMINUM VANDAL-PROOF JACKET. FOR EXPOSED COLD WATER PIPING EXPOSED TO AMBIENT FREEZING CONDITIONS, PROVIDE HEAT TRACE FOR PIPING. COORDINATE WITH ELECTRICAL.
19. PROVIDE 1 1/2" MINERAL FIBER INSULATION AND ALL WEATHER JACKET FOR DOMESTIC HOT WATER PIPING. PROVIDE 18 GA. PROTECTION SADDLES BETWEEN INSULATION AND PIPE HANGERS.
20. ENGAGE A FACTORY AUTHORIZED SERVICE REPRESENTATIVE TO PERFORM START-UP SERVICES AND TO TRAIN OWNER'S MAINTENANCE PERSONNEL TO ADJUST, OPERATE AND MAINTAIN EQUIPMENT.
21. ALL ITEMS PROJECTING THROUGH ROOF SHALL BE FLASHED AND COUNTER-FLASHED A MINIMUM OF 12" AND SHALL BE PAINTED TO MATCH ROOF COLOR. PROVIDE APPROVED SEALS AT ALL ROOF PENETRATIONS.
22. PROVIDE PREFABRICATED WATER HAMMER ARRESTOR AT EACH NEW BATHROOM GROUP ON HOT AND COLD WATER PIPING.
23. PROVIDE VACUUM BREAKERS AT FIXTURES WITH HOSE THREAD CONNECTIONS.
24. PROVIDE DIELECTRIC UNIONS AT ALL DISSIMILAR METAL PIPE CONNECTIONS.
25. ALL COMPONENTS OF PLUMBING SYSTEMS ARE TO BE INSTALLED PER MANUFACTURERS INSTRUCTIONS.
26. CONTRACTOR SHALL DEVELOP AND SUBMIT COORDINATION DRAWINGS WHICH IDENTIFY AND RESOLVE POTENTIAL CONFLICTS BETWEEN PLUMBING WORK, STRUCTURAL, FIRE SPRINKLER, HVAC DUCTWORK, AND ELECTRICAL SYSTEMS.
27. PROVIDE TRAP PRIMERS TO ALL FLOOR DRAINS AND INDIRECT WASTE RECEPTORS. CONTRACTOR SHALL CONNECT TO NEAREST POTABLE WATER SUPPLY WITHIN VICINITY.
28. WORK SHALL COMPLY WITH THE FOLLOWING AGENCIES:

D

- 2015 INTERNATIONAL ENERGY CONSTRUCTION CODE
- 2021 INTERNATIONAL BUILDING CODE
- 2021 INTERNATIONAL PLUMBING CODE
- NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
- AMERICAN SOCIETY OF HEATING AND REFRIGERATION ENGINEERS (ASHRAE)
- ALL APPLICABLE LOCAL CODES, ORDINANCES, AND THE AUTHORITY HAVING JURISDICTION

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C	10/27/2023	100% Submission
D	04/19/2024	City Comments

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PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED No. 30208 PROFESSIONAL ENGINEER JOHN PAUL GIBBS

SHEET TITLE
PLUMBING LEGEND AND GENERAL NOTES

SHEET NUMBER
P001

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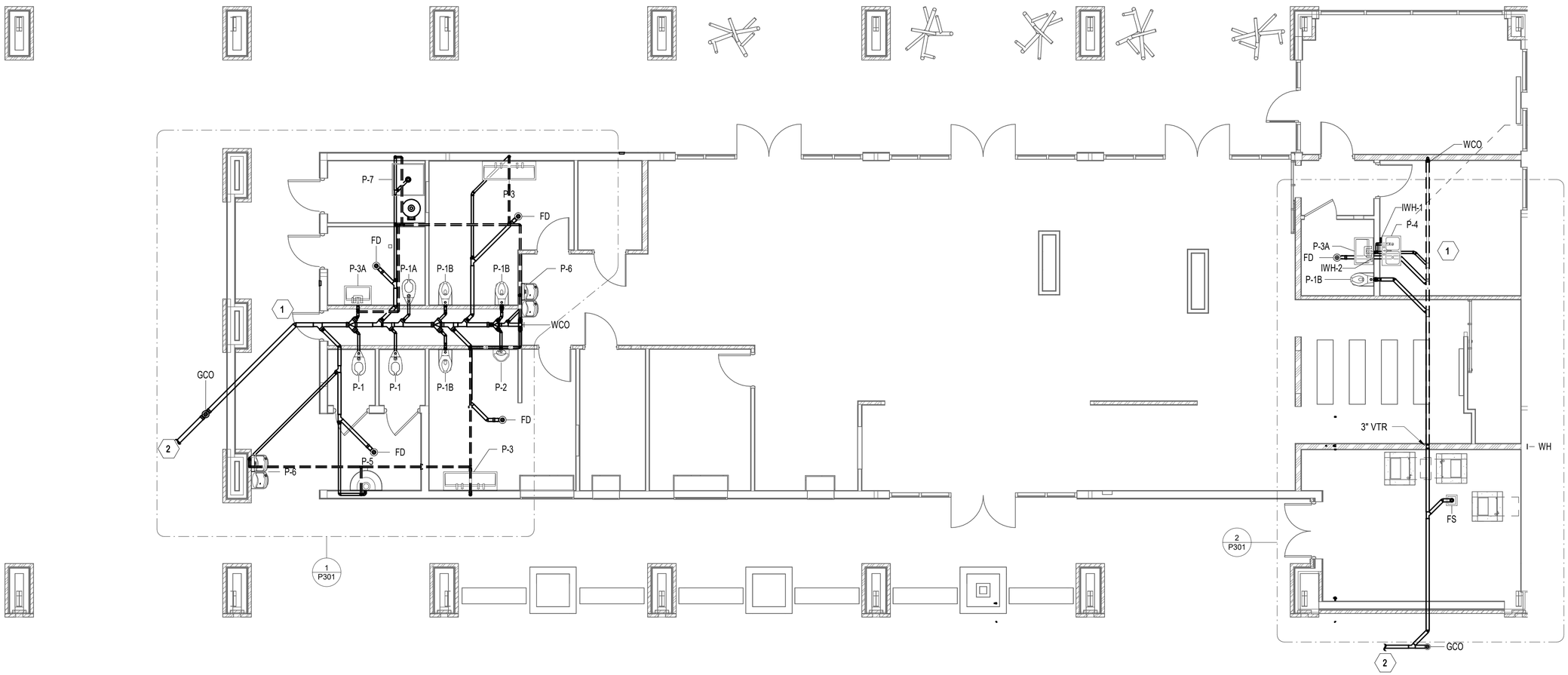
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SHEET NOTES

1. REFER TO ENLARGED PLAN ON P-301.
2. REFER TO CIVIL FOR CONTINUATION.



1 P101 SANITARY PLAN

Scale: 3/16" = 1'-0"

TRUE NORTH | PROJECT NORTH

5' 0' 5' 10'

SCALE: 3/16"=1'-0"

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ALABAMA LICENSED No. 30208 PROFESSIONAL ENGINEER JOHN PAUL GIBBS

SHEET TITLE

PLUMBING SANITARY PLAN

SHEET NUMBER:

P101

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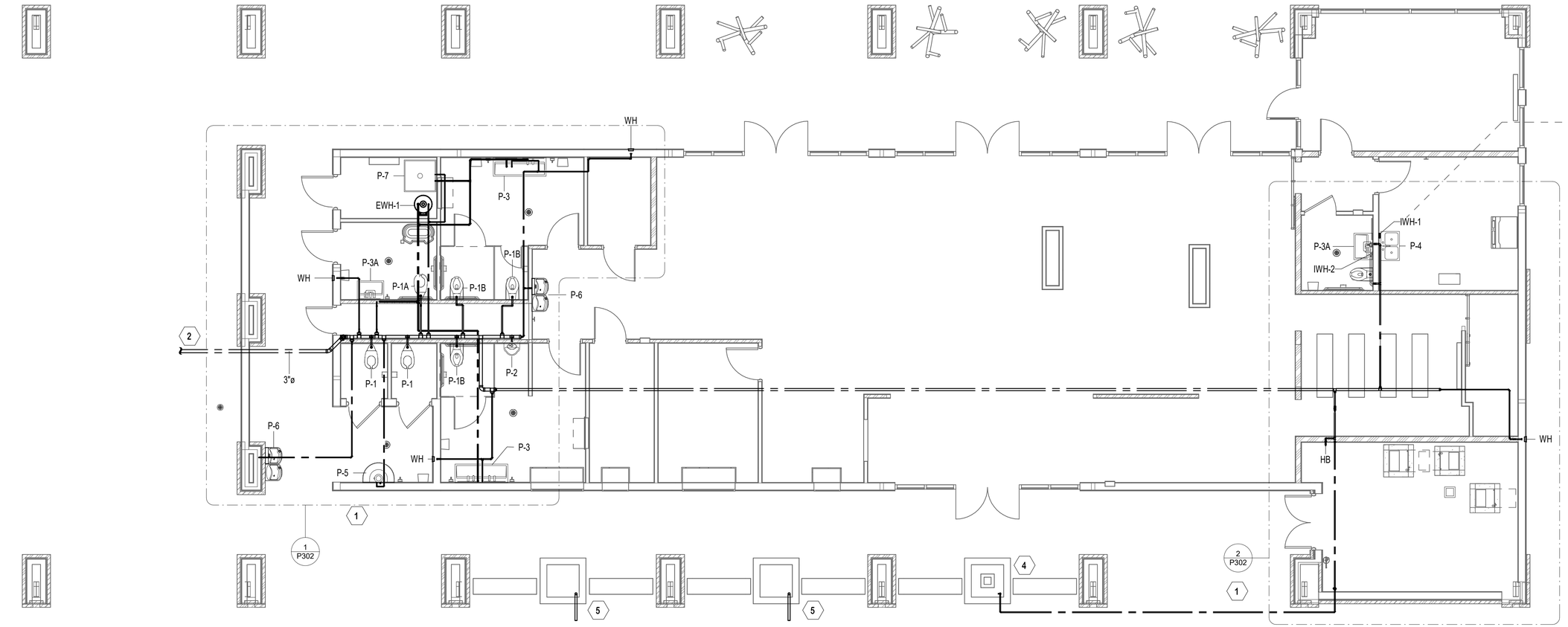
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SHEET NOTES

1. REFER TO ENLARGED PLAN ON P-302.
2. REFER TO CIVIL FOR CONTINUATION.
3. NOT USED
4. PROVIDE ADJUSTABLE FLOAT VALVE FOR FOUNTAIN. COORDINATE WITH FOUNTAIN PROVIDER.
5. PROVIDE 2" PIPNG SLEEVE IN PLANTER FOR ROUTING OF WATER PIPING TO BE PROVIDED BY LANDSCAPE CONTRACTOR. THE SLEEVE SHALL TERMINATE AT 2" ABOVE THE BOTTOM OF THE PLANTER AND EXTEND DOWN TO 12" BELOW GRADE AND OUT TO 12" FROM THE PLANTER FOOTING. COORDINATE WITH LANDSCAPE CONTRACTOR.



1 P102 DOMESTIC WATER PLAN

Scale: 3/16" = 1'-0"

TRUE NORTH | PROJECT NORTH

5' 0' 5' 10'

SCALE: 3/16"=1'-0"

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SHEET TITLE

PLUMBING DOMESTIC WATER PLAN

SHEET NUMBER.

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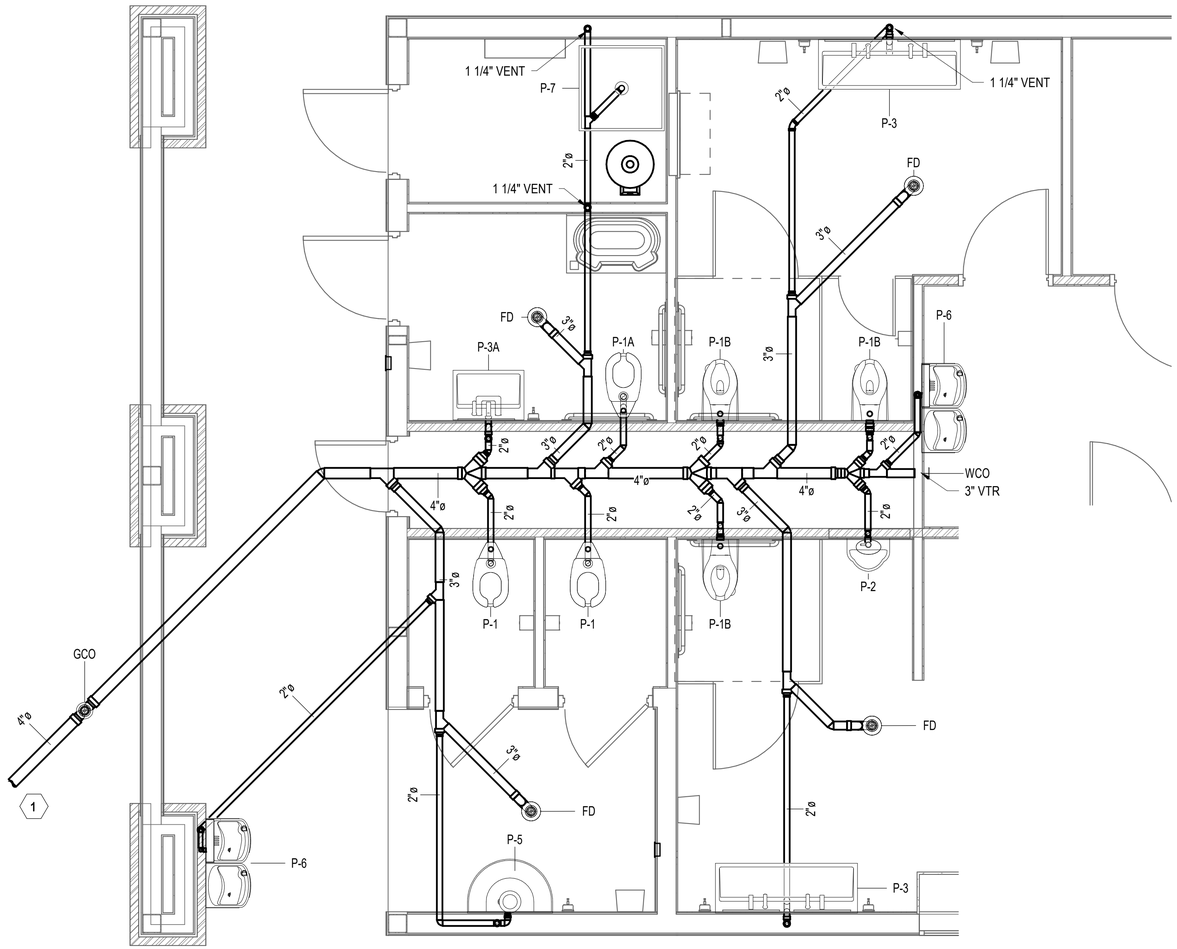
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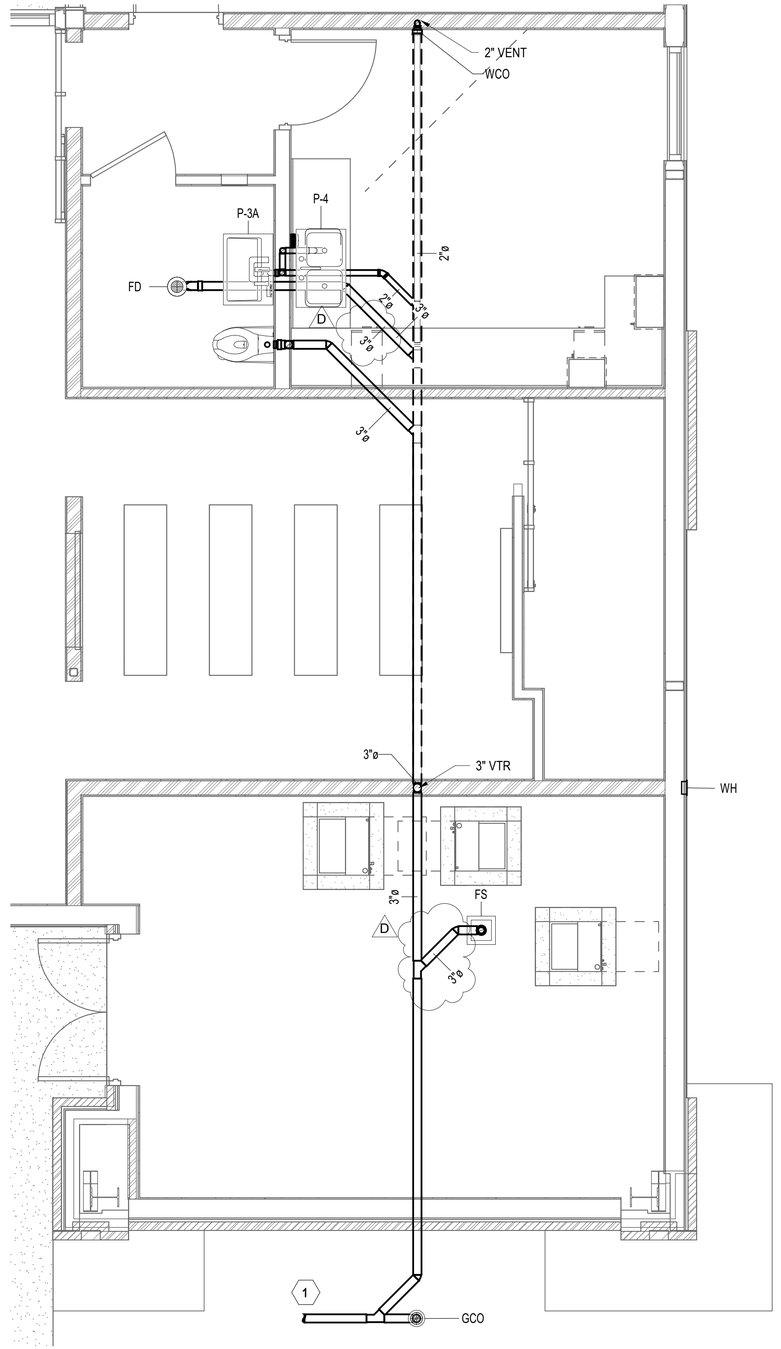
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SHEET NOTES

1 REFER TO CIVIL CONTINUATION.



1 / P301 ENLARGED SANITARY PLAN - RESTROOMS
Scale: 3/8" = 1'-0"



2 / P301 ENLARGED SANITARY PLAN - MECHANICAL ROOM
Scale: 3/8" = 1'-0"

TRUE NORTH PROJECT NORTH SCALE: 3/8"=1'-0"
2' 1' 0' 2' 4' 6'

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REV	DATE	REVISIONS DESCRIPTION
A	07/17/2023	30% Submission
B	10/02/2023	90% Submission
C	10/27/2023	100% Submission
D	04/19/2024	City Comments

DATE: 10/27/2023
DESIGNED BY: John P. Gibbs
DRAWN BY: Norris McMahon
CHECKED BY: John P. Gibbs
PROFESSION: PLUMBING
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED No. 30208 PROFESSIONAL ENGINEER JOHN PAUL GIBBS

SHEET TITLE
PLUMBING ENLARGED SANITARY PLANS

SHEET NUMBER
P301

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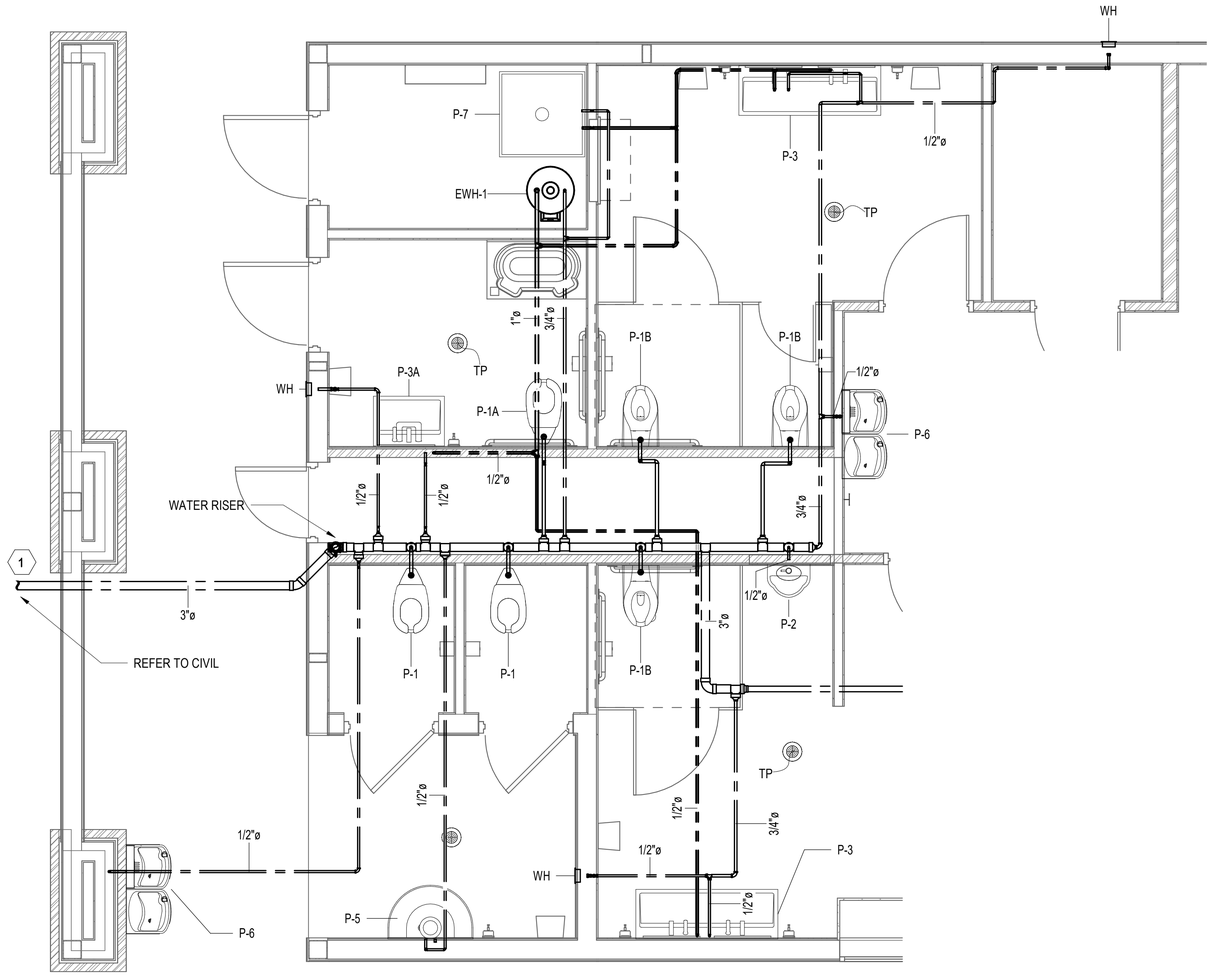
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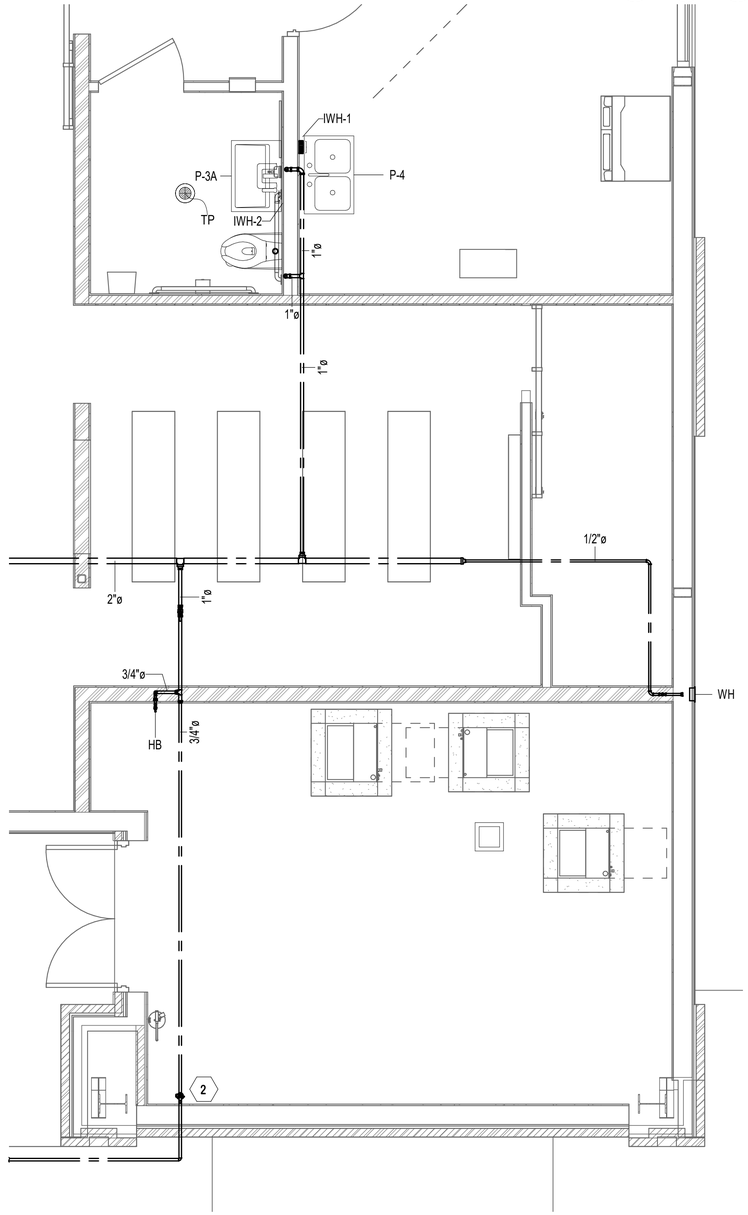
SHEET NOTES

D

1. REFER TO CIVIL FOR CONTINUATION.
2. PROVIDE 3/4" WATER SUPPLY WITH SHUT-OFF BALL VALVE AND BFD-2 AT 24"AFF IN MECHANICAL ROOM FOR WATER FOUNTAIN. ROUTE DOWN INTERIOR WALL THEN UNDER GROUND TO THE FOUNTAIN BASIN. REFER TO P102 FOR CONTINUATION. REFER TO DETAIL 9/P501.



1/P302 **ENLARGED DOMESTIC WATER PLAN - RESTROOMS**
Scale: 3/8" = 1'-0"



2/P302 **ENLARGED DOMESTIC WATER PLAN - MECHANICAL ROOM**
Scale: 3/8" = 1'-0"

TRUE NORTH | PROJECT NORTH
2' 1' 0' 2' 4' 6'
SCALE: 3/8"=1'-0"

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04/19/2024	D
10/27/2023	

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DESIGNED BY: John P. Gibbs
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PROFESSION: PLUMBING
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED No. 30208 PROFESSIONAL ENGINEER JOHN PAUL GIBBS

SHEET TITLE

PLUMBING ENLARGED DOMESTIC WATER PLANS

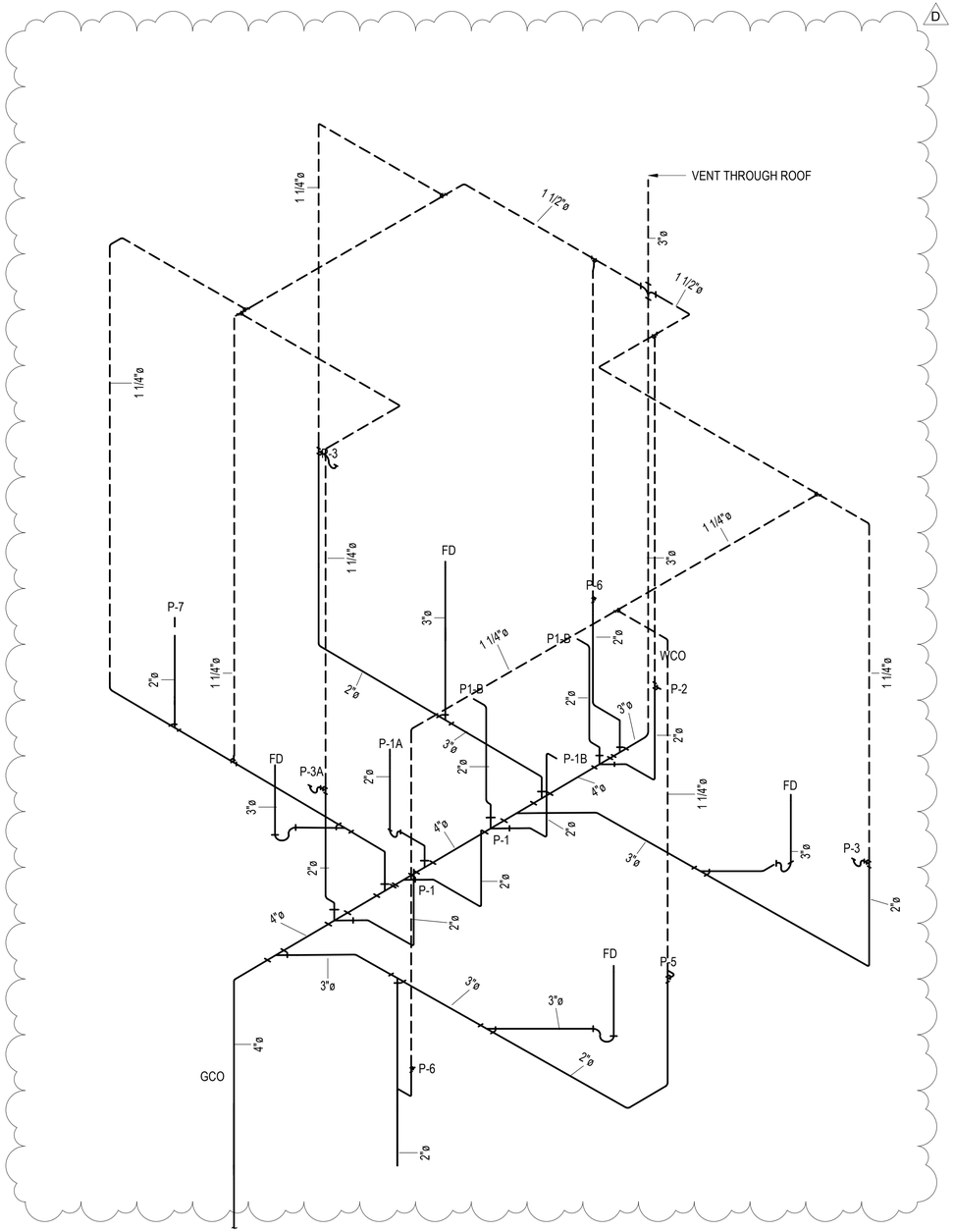
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P302

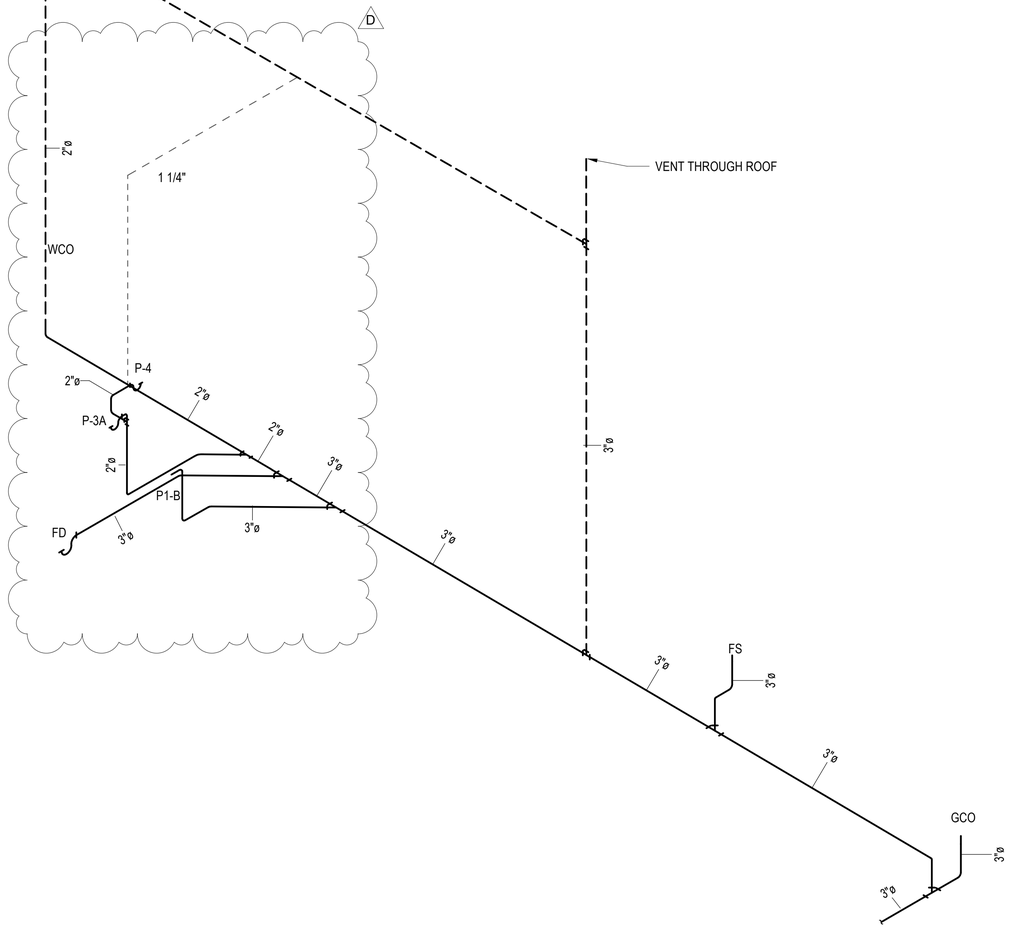
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1 P401 **SANITARY WESTSIDE ISOMETRIC**
Scale: NTS



2 P401 **SANITARY EASTSIDE ISOMETRIC**
Scale: NTS

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ALABAMA LICENSED No. 30208 PROFESSIONAL ENGINEER JOHN PAUL GIBBS

SHEET TITLE
SANITARY ISOMETRICS

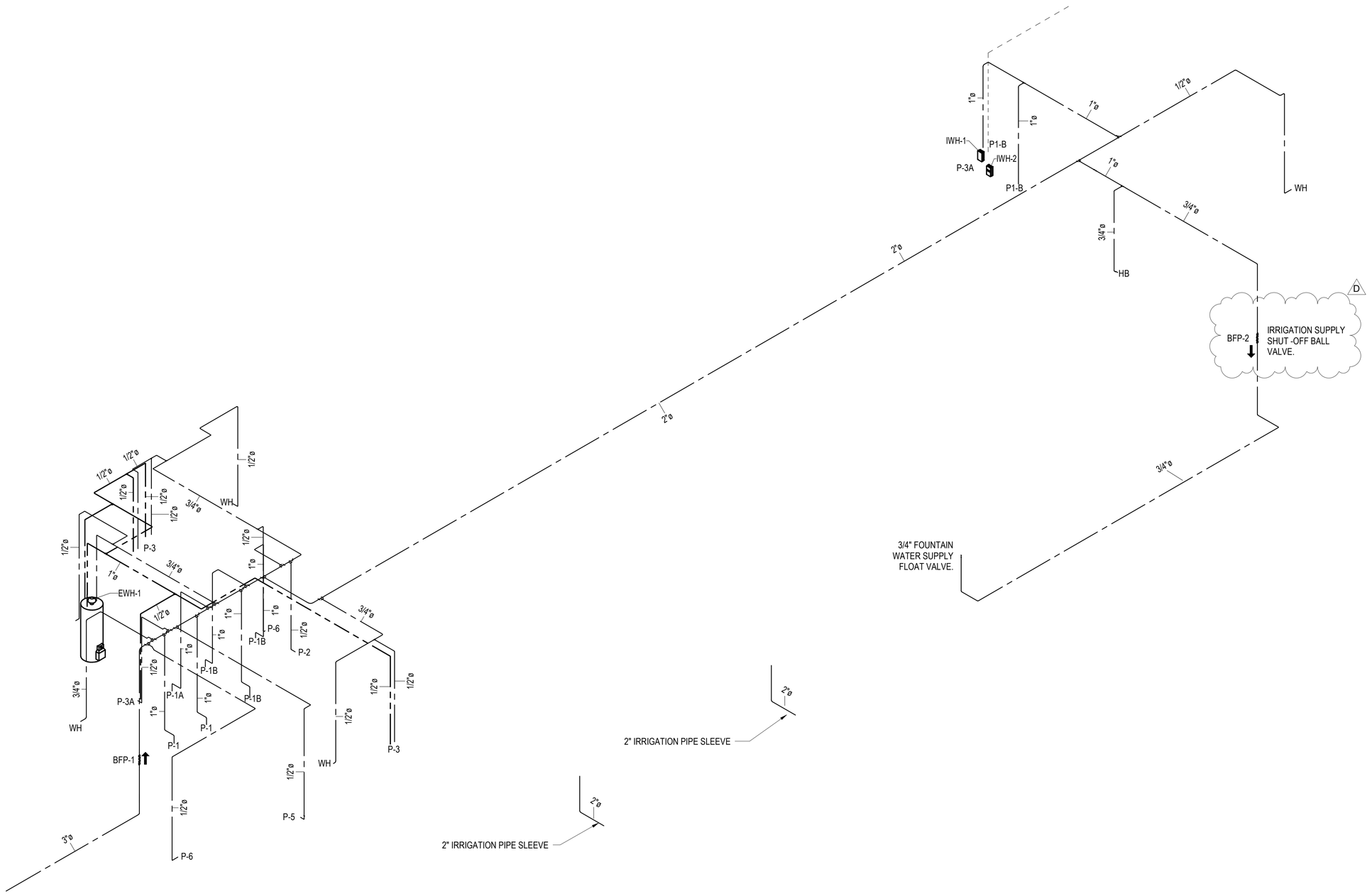
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P401

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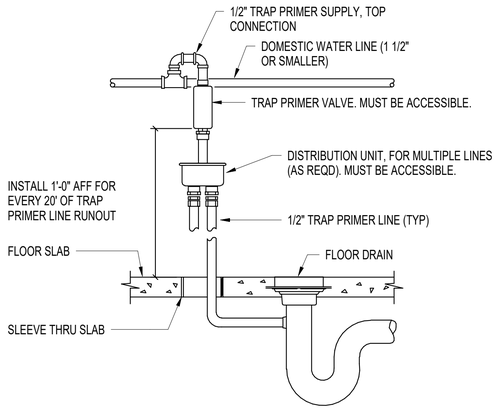
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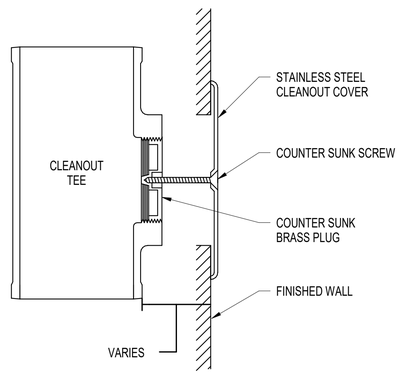
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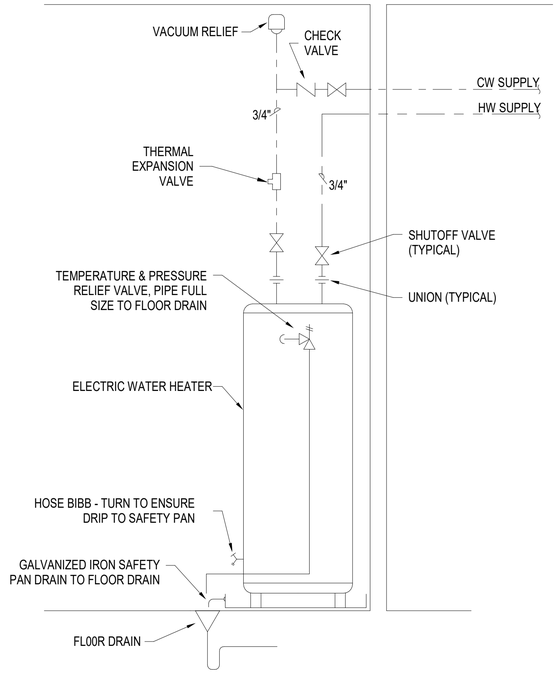
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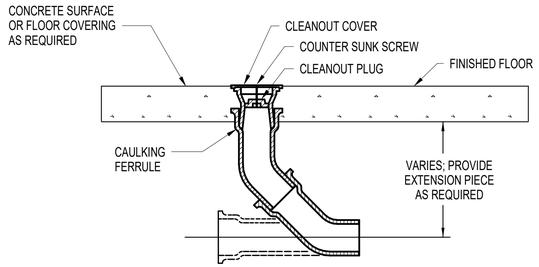
1 / P501 TRAP PRIMER DETAIL
Scale: NTS



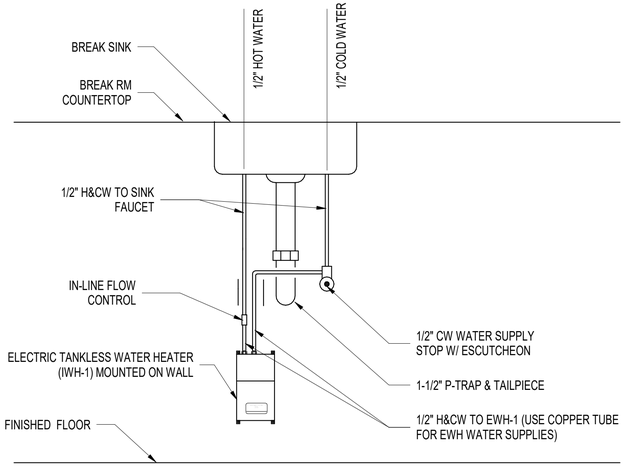
2 / P501 WALL CLEANOUT DETAIL
Scale: NTS



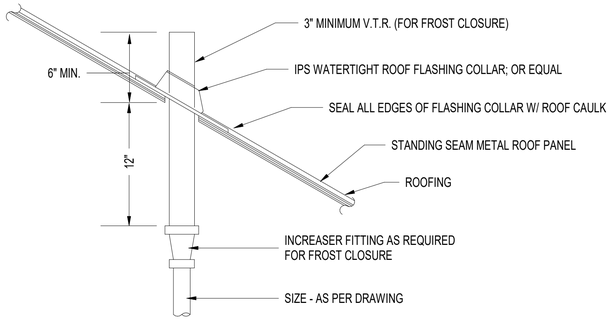
3 / P501 TYPICAL WATER HEATER DETAIL
Scale: NTS



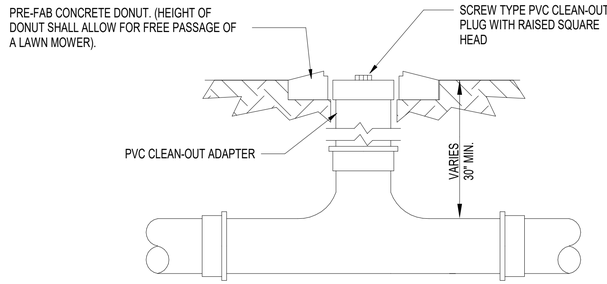
4 / P501 FLOOR CLEANOUT DETAIL
Scale: NTS



5 / P501 INSTANTANEOUS HOT WATER HEATER
Scale: NTS

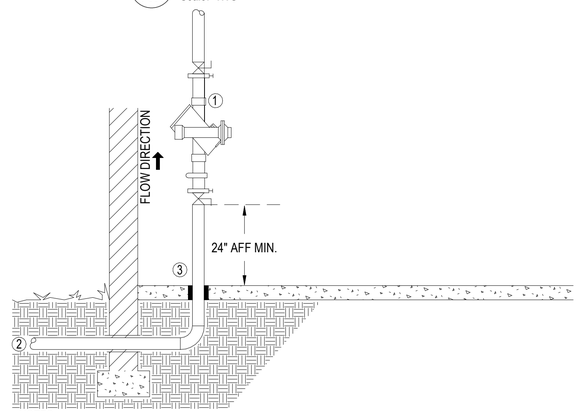


6 / P501 VENT THROUGH ROOF DETAIL
Scale: NTS



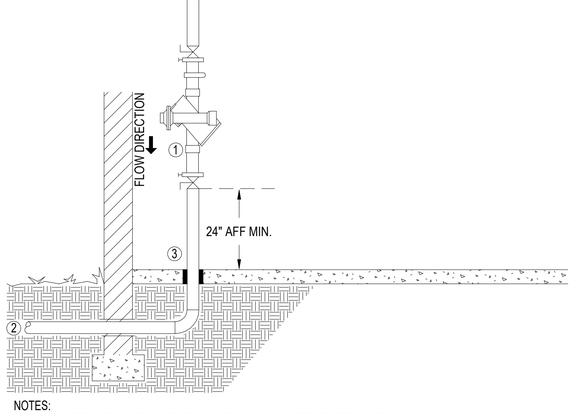
NOTE: CLEAN-OUT PIPE AND FITTINGS TO MATCH SIZE OF LINE INTO WHICH ACCESS IS BEING PROVIDED.

7 / P501 GRADE CLEANOUT DETAIL
Scale: NTS



NOTES:
1. 2-1/2" REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER ASSEMBLY
2. PIPE TO BUILDING (FROM METER)
3. PIPE SLEEVE WITH ANNULAR SPACE SEALED

8 / P501 POTABLE WATER SERVICE CONNECTION DETAIL
Scale: 3" = 1'-0"



NOTES:
1. 2-1/2" REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER ASSEMBLY
2. PIPE TO BUILDING (FROM METER)
3. PIPE SLEEVE WITH ANNULAR SPACE SEALED

9 / P501 REVERSIBLE POTABLE WATER SERVICE CONNECTION
Scale: NTS

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PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED No. 30208 PROFESSIONAL ENGINEER JOHN PAUL GIBBS

SHEET TITLE
PLUMBING DETAILS

SHEET NUMBER
P501

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PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE NAME	TYPE	DESCRIPTION	WASTE IN	VENT IN	IW IN	CW IN	HW IN	REMARKS
P-1	WATER CLOSET	FLOOR MOUNT	FLOOR MOUNT, ELONGATED BOWL, STAINLESS STEEL, 1-1/2" TOP SPUD, 15" RIM HEIGHT, ELONGATED OPEN FRONT TOILET SEAT. WATER CLOSET SHALL OPERATE WITH 25 PSI WATER PRESSURE. 1.28 GPF, MANUAL FLUSH VALVE, NON-HOLD OPEN NO LEAK HANDLE, ADJUSTABLE TAIL PIECE, INTERNAL SIPHON GUARD PROTECTION, SELF CLEANING, CHROME PLATED, AND SPLIT RING FLUSH -VALVE PIPE SUPPORT.	3	1 1/2	-	1	-	1, 5
P-1A	WATER CLOSET	(ABA) FLOOR MOUNT	FLOOR MOUNT, ELONGATED BOWL, STAINLESS STEEL, 1-1/2" TOP SPUD, ABA RIM HEIGHT, ELONGATED OPEN FRONT TOILET SEAT. WATER CLOSET SHALL OPERATE WITH 25 PSI WATER PRESSURE. 1.28 GPF, MANUAL FLUSH VALVE, NON-HOLD OPEN NO LEAK HANDLE, ADJUSTABLE TAIL PIECE, INTERNAL SIPHON GUARD PROTECTION, SELF CLEANING, CHROME PLATED, AND SPLIT RING FLUSH -VALVE PIPE SUPPORT.	3	1 1/2	-	1	-	1, 2, 5
P-1B	WATER CLOSET	WALL MOUNT	FLOOR MOUNT, ELONGATED BOWL, VITREOUS CHINA, 1-1/2" TOP SPUD, ABA RIM HEIGHT, ELONGATED OPEN FRONT TOILET SEAT. WATER CLOSET SHALL OPERATE WITH 25 PSI WATER PRESSURE. 1.28 GPF, MANUAL FLUSH VALVE, NON-HOLD OPEN NO LEAK HANDLE, ADJUSTABLE TAIL PIECE, INTERNAL SIPHON GUARD PROTECTION, SELF CLEANING, CHROME PLATED, AND SPLIT RING FLUSH -VALVE PIPE SUPPORT.	3	1 1/2	-	1	-	1, 2, 5
P-2	URINAL	(ABA) WALLMOUNT	3/4" TOP SPUD, VITREOUS CHINA, EXTENDED RIM. PROVIDE WITH STRAINER. PROVIDE WITH CONCEALED WALL SUPPORTS. URINAL SHALL BE EPA WATER SENSE LABELED. URINAL SHALL HAVE 20 PSI OPERATING PRESSURE. 0.125 GPF, MANUAL FLUSH VALVE, NON-HOLD OPEN NO LEAK HANDLE, ADJUSTABLE TAIL PIECE, INTERNAL SIPHON GUARD PROTECTION, SELF CLEANING, CHROME PLATED, AND SPLIT RING FLUSH -VALVE PIPE SUPPORT.	2	1 1/4	-	3/4	-	1, 2, 3, 5, 6
P-3	LAVATORY	(ABA) COUNTERMOUNT	TWO STATION, SOLID SURFACE SINK INTEGRAL TO COUNTERTOP. REFER TO ARCHITECTURAL. BRADLEY VERGE WITH WASHBAR TECHNOLOGY - LVQD2. YUKON FINISH FOR MEN'S ROOM AND ARUBA FINISH FOR WOMEN'S. 0.5 GPM AERATOR, 4" CENTERSET. BRUSHED BRASS FINISH FAUCET. FAUCET SHALL BE EPA WATER SENSE LABELED. PROVIDE WITH POINT OF USE THERMOSTATIC MIXING VALVE. FAUCET SHALL BE LAMINAR FLOW TYPE. PROVIDE WITH ABA PROTECTION ON TRAP AND SUPPLY WHERE EXPOSED.	2	1 1/4	-	1/2	1/2	1,2, 3, 5, 7
P-3A	LAVATORY	(ABA) COUNTERMOUNT	SINGLE STATION, SOLID SURFACE SINK INTEGRAL TO COUNTERTOP. REFER TO ARCHITECTURAL. 0.5 GPM AERATOR, 4" CENTERSET,. FAUCET SHALL BE EPA WATER SENSE LABELED. PROVIDE WITH POINT OF USE THERMOSTATIC MIXING VALVE. FAUCET SHALL BE LAMINAR FLOW TYPE. PROVIDE WITH ABA PROTECTION ON TRAP AND SUPPLY WHERE EXPOSED.	2	1 1/4 D	-	1/2	1/2	1, 2, 3, 5, 7
P-4	KITCHEN SINK	COUNTERMOUNT	33"x22", DOUBLE BOWL, #20 GAUGE 304 STAINLESS STEEL, SATIN FINISH, 7" BOWL DEPTH, FULLY UNDERCOATED. 0.5 GPM, 8" SWIVEL GOOSENECK, VANDAL RESISTANT COLOR CODED METAL LEVER HANDLES, CHROME PLATED, 4" CENTERS, INTEGRAL SHANKS, QUARTER RUN DISC CARTRIDGES. PROVIDE WITH WATER FILTER, 2 STAGE, UNDERSINK, PROVIDE WITH CHROME PLATED FAUCET. PROVIDE WITH POINT OF USE THERMOSTATIC MIXING VALVE. FAUCET SHALL BE WATER SENSE LABELED. FAUCET SHALL BE LAMINAR FLOW TYPE.	2	1 1/4	-	1/2	1/2	1, 3, 5, 7
P-5	HAND WASH FOUNTAIN	SEMI-CIRCULAR	SEMI-CIRCULAR WASH FOUNTAIN, STAINLESS STEEL FINISH. BRADLEY WASH FOUNTAIN FBD1035 STANDARD HEIGHT OR ENGINEER APPROVED EQUAL.	3	1 1/2	-	1/2	1/2	1, 3, 5
P-6	ELECRIC WATER COOLER	(ABA) HIGH-FLOW	SELF CONTAINED, DOUBLE WALL HUNG, ELECTRIC, WITH BOTTLE FILLING STATION, VANDAL RESISTANT, PUSH BAR, PERFORATED STAINLEES STEEL LOUVER SCREEN, LEAD FREE, GALVANIZED STEEL FRAME WITH STAINLESS STEEL TOP, HEAVY DUTY BUBBLER. PROVIDE WITH CONCEALED WALL SUPPORT. PROVIDE WITH FILTER.	1 1/2	1 1/4	-	1/2	-	1, 2, 4, 5, 6
P-7	MOP SINK	FLOOR MOUNT	24"x24" PRECAST TERAZZO, MADE OF MARBLE CHIPS CAST IN PORTLAND CEMENT TO PRODUCE A STRENGTH NOT LESS THAN 3000 P.S.I., S.S. STRAINER, S.S. BUMPER GUARD DOUBLE LEVER HANDLES, SERVICE SINK FAUCET, CHROME PLATED, TOP MOUNTED ADJUSTABLE WALL BRACE, PAIL HOOK, HOSE THREADED SPOUT, AND LOOSE KEY SERVICE STOPS. COORDINATE WITH ARCHITECTURAL FOR MOUNTING HEIGHT.	3	1 1/2	-	1/2	1/2	1, 3, 5
FS	FLOOR SINK	-	12"X12" RECEPTOR, 10" DEEP, CAST IRON BODY, VANDAL PROOF GRATE WITH 1/2" SLOTTED OPENINGS, WHITE ACID RESIST PORCELAIN ENAMEL INTERIOR AND TOP, WHITE ANTI SPLASH DOME STRAINER. PROVIDE TRAP PRIMER FOR FLOOR SINKS INDICATED TO HAVE TRAPS ON PLANS.	3	1 1/2 D	SEE PLANS	1/2	-	5
FD	FLOOR DRAIN	-	CAST IRON BODY, BOTTOM OUTLET, INVERTIBLE MEMBRANE CLAMP, ADJUSTABLE COLLAR, NICKEL BRONZE STRAINER, TRAP PRIMER CONNECTION.	3	1 1/2	-	1/2	-	5
HB	HOSE BIBB	-	ANTI SIPHON, VACUUM BREAKER, CHROME FINISH.	-	-	-	3/4	-	1, 5, 6
WH	WALL HYDRANT	-	AUTOMATIC DRAINING, FREEZELESS, WITH HOSE CONNECTION, ANTI SIPHON VACUUM BREAKER, FLUSH MOUNTED BOX AND DOOR, LOOSE KEY OPERATED, CHROME FINISH.	-	-	-	3/4	-	1, 5, 6
BFP-1	BACKFLOW PREVENTER	-	REDUCED PRESSURE ASSEMBLY, WITH GATE VALVES, FLANGED END CONNECTIONS, FDA APPROVED, UL CLASSIFIED, 175 PSI MAX. WORKING PRESSURE.	-	-	-	3	-	1, 5, 6
BFP-2	BACKFLOW PREVENTER	-	REDUCED PRESSURE ASSEMBLY, WITH GATE VALVES, FLANGED END CONNECTIONS, FDA APPROVED, UL CLASSIFIED, 175 PSI MAX. WORKING PRESSURE.	-	-	-	3/4"	-	1, 5, 6

NOTES:
1. WATER SUPPLY TAPPING TO EACH FIXTURE SHALL BE FULL SIZE.
2. INSTALL PLUMBING FIXTURES LABELED "ABA" IN ACCORDANCE WITH ABA REQUIREMENTS. COORDINATE WITH ARCHITECTURAL DRAWINGS.
3. PROVIDE HOT WATER TO FIXTURES WHERE INDICATED.
4. COORDINATE POWER REQUIREMENTS WITH ELECTRICAL.
5. PROVIDE FIXTURES WITH ALL APPURTENANCES AS NECESSARY FOR A COMPLETE INSTALLATION.
6. COORDINATE MOUNTING HEIGHT WITH ARCHITECT.
7. POINT OF USE THERMOSTATIC MIXING VALVE SHALL COMPLY WITH ASSE 1070.
8. VENT SIZE INDICATED IN SCHEDULE IS FOR INDIVIDUAL FIXTURE VENTING. SEE PLANS FOR VENT PIPE SIZES.

DOMESTIC WATER HEATING SCHEDULE

MARK	TYPE	FIXTURE SERVED	STORAGE CAPACITY (GAL)	RECOVERY @ 80F RISE (GAL/H)	RELIEF VALVE SETTING (PSIG)	NO OF ELEMENTS	ELECTRICAL DATA TOTAL KW	FLA	V / Φ / Hz
EWH-1	ELECTRIC	RESTROOM/JAN	30	37	100	5.8	5	25	240/1/60

NOTES APPLICABLE TO ALL WATER HEATERS:
1. SEE DETAIL 1 ON SHEET P502.
2. VESSEL SHALL BE CONSTRUCTED TO SECTION IV OF THE ASME CODE FOR 150 PSIG WORKING PRESSURE AND GLASS-LINED WITH ANODIC PROTECTION.
3. COORDINATE POWER AND DISCONNECT REQUIREMENTS WITH ELECTRICAL DRAWINGS.
4. UNIT SHALL HAVE ADJUSTABLE TEMPERATURE CONTROL, MANUAL RESET HIGH TEMPERATURE CUT-OFF PER ELEMENT.
5. UNIT SHALL BE PROVIDED WITH CSA CERTIFIED AND ASME RATED T&P RELIEF VALVE.
6. UNIT SHALL BE PROVIDED WITH FACTORY INSTALLED TERMINAL BLOCK.
7. UNIT SHALL BEAR THE UNDERWRITERS' LABORATORIES LABEL. PROVIDE UNIT WITH A MINIMUM OF 3 YEAR WARRANTY.
8. PROVIDE PRE-CHARGED EXPANSION TANK (FLEXIBLE DIAPHRAGM TYPE) ON CW INLET PER MFR RECOMMENDATIONS.
9. WATER HEATER SHALL MEET THE THERMAL EFFICIENCY AND STANDBY LOSS REQUIREMENTS OF THE US DEPARTMENT OF ENERGY AND CURRENT EDITION OF ASHRAE/IESNA STANDARD 90.1.
10. TEMPERATURE CONTROL SHALL COMPLY WITH ASHRAE 90.1-2013, SECTION 7.4.

INSTANTANEOUS WATER HEATING SCHEDULE

MARK	TYPE	FIXTURE SERVED	QUANTITY	TURN ON FLOW (GPM)	MAX. OPERATING PRESSURE (PSI)	ELECTRICAL DATA KW	V / Φ / Hz
IWH-1	ELECTRIC	KITCHEN SINK	1	0.5	150	5.8	240/1/60
IWH-2	ELECTRIC	KITCHEN SINK	1	0.5	150	5.8	240/1/60

NOTES APPLICABLE TO ALL INSTANTANEOUS WATER HEATERS:
1. UNIT SHALL BE UL LISTED.
2. ELEMENT SHALL BE REPLACEABLE CARTRIDGE INSERT.
3. HEATER SHALL MEET ANSI/NSF 372.
4. UNIT SHALL BE PROVIDED WITH HIGH TEMPERATURE LIMIT SWITCH.
5. UNIT SHALL BE OF THERMOSTATIC TYPE.
6. COORDINATE POWER AND DISCONNECT REUIREMENTS WITH ELECTRICAL DRAWINGS.

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AFRICATOWN WELCOME CENTER
City of Mobile
1959 Bay Bridge Cutoff Road
Mobile, AL. 36610

REVISIONS DESCRIPTION

REV	DATE	DESCRIPTION
A	07/17/2023	30% Submission
B	10/02/2023	90% Submission
C	10/27/2023	100% Submission
D	04/19/2024	City Comments

DATE: 10/27/2023
DESIGNED BY: John P. Gibbs
DRAWN BY: Norris McMahon
CHECKED BY: John P. Gibbs
PROFESSION: PLUMBING
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED No. 30208 PROFESSIONAL ENGINEER JOHN PAUL GIBBS

SHEET TITLE
PLUMBING SCHEDULES

SHEET NUMBER
P601

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GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE, NATIONAL ELECTRIC SAFETY CODE, N.F.P.A., O.S.H.A. REGULATIONS AND ALL OTHER EXISTING CODES AND REGULATIONS OF AUTHORITIES WHICH HAVE JURISDICTION.

2. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC IN NATURE AND NOT EVERY DETAIL OR CONDUIT IS SHOWN. EXISTING CONDITIONS AND DIMENSIONS SHALL BE VERIFIED IN THE FIELD BEFORE COMMENCING ANY FABRICATION, ORDERING ANY MATERIAL, OR PERFORMING ANY WORK. ANY DEPARTURE FROM CONCEPT SHOWN ON THE CONTRACT DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. ALL ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS AND/OR REQUIRED FOR THE FULL INTEGRITY OF THE CONTRACT SHALL BE FURNISHED, INSTALLED AND CONNECTED BY THE CONTRACTOR, EXCEPT WHERE EQUIPMENT SHOWN IS IDENTIFIED AS "EXISTING" OR OTHERWISE NOTED ON THE DRAWINGS.

3. UNLESS OTHERWISE NOTED, EQUIPMENT AND MATERIALS TO BE PROVIDED SHALL BEAR LISTING AND LABELING BY A NATIONALLY RECOGNIZED TESTING AGENCY WHERE SUCH STANDARD HAD BEEN ESTABLISHED FOR THAT TYPE OF EQUIPMENT/MATERIAL.

4. THE CONTRACTOR SHALL SUBMIT DETAILED EQUIPMENT LAYOUT PLANS, SECTIONS, AND MOUNTING DETAILS SHOWING PROPOSED LOCATION OF ALL EQUIPMENT AND REQUIRED WORKING/SERVICE CLEARANCES PRIOR TO INSTALLATION.

5. CONTRACTOR SHALL VISIT THE PROJECT SITE AND EXAMINE AND CONFIRM EXISTING CONDITIONS. ALL CHANGES SHALL BE PRESENTED DURING SHOP DRAWING SUBMITTALS FOR ENGINEER'S APPROVAL.

6. CONDUITS SHALL CONTAIN AN INSULATED GROUND WIRE BONDED TO ENCLOSURES AND SIZED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NEC, IF SIZE IS NOT SHOWN ON THE CONTRACT DRAWINGS.

7. THE CONTRACTOR SHALL PROVIDE CONDUIT FITTINGS, CONNECTORS, CLAMPS, HARDWARE, HANGERS, AND SUPPORTS AS NECESSARY FOR A COMPLETE INSTALLATION.

8. THE CONTRACTOR SHALL PROVIDE TAGS FOR EQUIPMENT, CONDUITS, AND CABLES THAT ARE INSTALLED UNDER THIS CONTRACT. TAG IDENTIFICATIONS SHALL BE IN ACCORDANCE WITH CONTRACT DRAWINGS. TAGS FOR CONDUITS SHALL BE AS DESCRIBED IN SPECIFICATIONS.

9. UNUSED OPENINGS IN CONDUITS, BOXES, DISCONNECT SWITCHES, CABINETS, AND PANEL BOARDS SHALL BE CAPPED OR PLUGGED.

10. UPDATE EXISTING PANELBOARD DIRECTORIES TO REFLECT THE CIRCUITING IN EXISTING PANELBOARDS AFFECTED BY THIS ALTERATION.

11. CONTRACTOR SHALL PROVIDE THE NECESSARY MATERIALS, LABOR AND ATTENDANCE FOR THE OPERATION OF TEMPORARY LIGHT AND CONSTRUCTION POWER AS REQUIRED DURING WORKING HOURS FOR THE ENTIRE CONSTRUCTION PERIOD.

12. CONTRACTOR SHALL MAINTAIN CONTINUITY OF ANY EXISTING CIRCUITS AFFECTED BY THIS ALTERATION. RECONNECT ALL ALTERED OR REROUTED WORK TO ITS FULLY FUNCTIONAL STATE PRIOR TO ALTERATION.

13. PROVIDE ALL NECESSARY TEMPORARY WIRING TO MAINTAIN EXISTING INSTALLATIONS WHICH MUST REMAIN IN SERVICE DURING CONSTRUCTION PERIOD.

14. ALL BRANCH CIRCUITS OVER 75 FEET IN LENGTH SHALL BE RUN WITH #10 CONDUCTOR, UNLESS OTHERWISE NOTED.

15. SCHEDULE ALL DISCONNECTION AND INTERRUPTIONS OF ELECTRICAL SERVICE, COMMUNICATIONS AND SUPERVISORY SYSTEMS WITH THE OWNER AND ENGINEER.

16. CONTRACTORS SHALL FOLLOW ALL OWNER SITE SAFETY WORK PROCESSES AND PROCEDURES, FOR EXAMPLE, WORK PERMITS, SAFETY TASK ANALYSIES, LOCKOUT TAGOUT (LOTO), LOCK, TAG AND TRY, AND RED TAG, ETC.

17. CONTRACTORS SHALL COORDINATE ALL WORK ACTIVITIES WITH OPERATIONS, MAINTENANCE, AND OTHER CONTRACTORS.

18. UNLESS SPECIFICALLY NOTED, ALL ELECTRICAL EQUIPMENT (GENERATORS, AUTOMATIC TRANSFER SWITCHES, PANELBOARDS, MOTOR CONTROLLERS, WIRE, PANELBOARDS, SWITCHBOARDS, DISCONNECTS, LIGHTING, INSTRUMENTS, CONTROL PANELS, MOTOR, ETC) THAT MAY BE SHOWN AS TO BE REMOVED ARE THE PROPERTY OF THE OWNER AND SHALL BE RETURNED TO THE OWNER.

ABBREVIATIONS

A OR AMP	AMPERES
ACT	ABOVE COUNTER TOP (6")
AF	AMP FRAME
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AM	AMMETER
APPROX	APPROXIMATELY
AS	AMMETER SELECTION SWITCH
ASYM	ASYMMETRICAL
AT	AMP TRIP
ATC	AUTOMATIC TRANSFER CONTROLLER
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
BC	BARE COPPER
BLDG	BUILDING
C	CONDUIT
C, CDT	CONDUIT
C, /C	CONDUCTOR
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CLF	CURRENT LIMITING FUSE
CO	COMPANY
COL	COLUMN
CNTL	CONTROL
CSLD	CONTINUOUS STATISTICAL LEAK DETECTION
CT	CURRENT TRANSFORMER
Cu	CABLE
D	DEPTH
DIA	DIAMETER
DS OR DISC	DISCONNECT SWITCH
DWG(S)	DRAWING(S)
ELEC	ELECTRIC, ELECTRICAL
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ESTOP	EMERGENCY STOP
EX, EXIST.	EXISTING
EXP	EXPLOSION PROOF
EF	EXHAUST FAN
EG	EQUIPMENT GROUND
EGC	EQUIPMENT GROUND CONDUCTOR
ETC	ET CETERA
EXIST	EXISTING
F	FUSE
FCR	FLOAT CONTROL RELAY
FL, FLR	FLOOR
FT	FEET
G OR GND	GROUND
GA	GAUGE
GALV	GALVANIZED
GEC	GROUNDING ELECTRODE CONDUCTOR
GEN	GENERATOR
GF	GROUND FAULT
GFCI	GROUND FAULT CIRCUIT INTERRUPT
GFI	GROUND FAULT INTERRUPTING
H-O-A	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
HVAC	HEATING, VENTILATION & AIR
IG	ISOLATED GROUND
ISBR	INTRINSICALLY SAFE BARRIER RELAY
IMC	INTERMEDIATE METAL CONDUIT
IN	INCH
IR	INFRARED
ISCA	INSTANTANEOUS SHORT CIRCUIT AVAILABLE
JB OR J	JUNCTION BOX
kVA	KILOVOLT - AMPS
kW	KILOWATTS
kWH	KILOWATT-HOUR
L	LENGTH
LA	LIGHTNING ARRESTOR
LFMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
LTG	LIGHTING
MAX	MAXIMUM
MCB OR MB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MER	MECHANICAL EQUIPMENT ROOM
MFR	MANUFACTURER
MH OR MTG	MOUNTING HEIGHT
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MTD	MOUNTED
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MFRS ASSOCIATION
NF	NON-FUSIBLE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
No.	NUMBER
NO	NORMALLY OPEN
NTS	NOT TO SCALE
O.C.	ON CENTER
OCPD	OVERCURRENT PROTECTIVE DEVICE
O/F	OVERFILL
OHE	OVERHEAD ELECTRICAL
OSHA	OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION
P	POLE
PERM	PERMANENT
PFC	POWER FACTOR CAPACITOR
PH, Ø	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
PR	PAIR

ABBREVIATIONS

PVC	POLYVINYLCHLORIDE CONDUIT
PWR	POWER
R&R	REMOVE AND RELOCATE
R	RELOCATE
RE	RELOCATED
RECEPT	RECEPTACLE
REF	REFERENCE
RGS	RIGID GALVANIZED STEEL
RMS	ROOT MEAN SQUARE
SE	SERVICE ENTRANCE
SF	SEAL FITTING
SH	SHIELDED
SS	STAINLESS STEEL
SPD	SURGE PROTECTION DEVICE
SW	SWITCH
SWBD	SWITCHBOARD
SYM	SYMMETRICAL
TEL	TELEPHONE
TWIS	TWISTED INDIVIDUAL SHIELD
TWOS	TWISTED OUTER SHIELD
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITER'S LABORATORIES
UV	ULTRAVIOLET
V	VOLTS
VA	VOLT AMPS
VAC	VOLTS ALTERNATING CURRENT
VDC	VOLTS DIRECT CURRENT
VFD	VARIABLE FREQUENCY DRIVE
VM	VOLTMETER
VMS	VOLTMETER SELECTOR SWITCH
W	WATT
W/	WITH
W/O	WITHOUT
WM	WATTMETER
WP	WEATHER PROOF
XFMR	TRANSFORMER

ONE-LINE DIAGRAM

CONNECTION.DWG — CONNECTION TO ELECTRICAL UTILITY. VOLTAGE, PHASES AS INDICATED

METER.DWG — UTILITY METER

GENERATOR.DWG — GENERATOR
- 'XX' DESIGNATES POWER RATING
- 'YY' DESIGNATES VOLTAGE

CT.DWG — CURRENT TRANSFORMER (CT).
'X:Y' INDICATES RATIO
'Z' INDICATES QUANTITY (1 PER PHASE UNLESS OTHERWISE INDICATED)

PT.DWG — POTENTIAL TRANSFORMER (PT).
'X:Y' INDICATES RATIO
'Z' INDICATES QUANTITY (1 PER PHASE UNLESS OTHERWISE INDICATED)

XFMR.DWG — TWO WINDING TRANSFORMER, PHASES AS DETERMINED BY OCPD
-'Z' INDICATES % IMPEDANCE ANSI STANDARD IF NOT SPECIFIED
-'WW' INDICATES STRUCTURE DESIGNATION
-'XX' INDICATES POWER RATING
-'YY' INDICATES PRIMARY VOLTAGE
-'QQ' INDICATES SECONDARY VOLTAGE WINDINGS AS INDICATED
-'△' INDICATES DELTA CONNECTION
-'⏚' INDICATES WYE CONNECTION WITH GROUNDED NEUTRAL

XFMR2.DWG — THREE WINDING TRANSFORMER
-'W' INDICATES STRUCTURE DESIGNATION
-'XX' INDICATES POWER RATING (BY WINDING)
-'YY' INDICATES VOLTAGE RATING (BY WINDING)
-'Z' INDICATES IMPEDANCE (BY WINDING)
-'△' INDICATES DELTA CONNECTION
-'⏚' INDICATES WYE CONNECTION WITH GROUNDED NEUTRAL

ATS.DWG — TRANSFER SWITCH
- 'W' INDICATES
  A: AUTOMATIC
  M: MANUAL
- 'XX' INDICATES RATING IN AMPS
- 'Y' INDICATES NUMBER OF POLES

BYPASS.DWG — BYPASS ISOLATION TRANSFER SWITCH
-'XX' INDICATES AMPERE RATING
-'Y' INDICATES NUMBER OF POLES

SWITCH.DWG — SWITCH
-'XX' INDICATES AMPERE RATING
-'Y' INDICATES NUMBER OF POLES

BKR-HV.DWG — MEDIUM & HIGH VOLTAGE CIRCUIT BREAKER
- 'XX' INDICATES TRIP RATING IN AMPS
- 'YY' INDICATES FRAME RATING

BKR-LV.DWG — LOW VOLTAGE MOLDED CASE CIRCUIT BREAKER.
- 'XX' INDICATES TRIP RATING IN AMPS (IF TRIP INTEGRAL)
- 'YY' INDICATES FRAME RATING, ID SPECIFIED
- 'W' INDICATES NUMBER OF POLES (3 UNLESS OTHERWISE NOTED)
- 'Z' DESIGNATES TYPE:
  BLANK: THERMAL MAGNETIC
  LSI: ELECTRONIC TRIP
  MCP: MOTOR CIRCUIT PROTECTOR
  GFI: GROUND FAULT INTERRUPTING

ONE-LINE DIAGRAM

FUSE.DWG — FUSE
- 'XX' INDICATES TRIP RATING IN AMPS
- 'Z' INDICATES CLASSIFICATION (IF SPECIFIED)

ANGLE_BRACKETS.DWG — ANGLED BRACKETS INDICATE DRAWOUT DEVICE

OCPD.DWG — PROTECTIVE RELAY, METERING, OR INTERLOCKING DEVICE.
'XX' DESIGNATIONS:
A: AMMETER
V: VOLTMETER
PF: POWER FACTOR
K: KIRK KEY INTERLOCK
I: ELECTRICAL INTERLOCK
25: SYNCHRONISM CHECK
27: UNDER VOLTAGE
46: CURRENT UNBALANCE
47: PHASE-SEQUENCE VOLTAGE
50: INSTANTANEOUS OVERCURRENT
51: TIME OVERCURRENT
52: AC CIRCUIT BREAKER
55: POWER FACTOR
59: OVER VOLTAGE
64: GROUND PROTECTIVE RELAY
81: FREQUENCY
86: LOCKING OUT RELAY
* SPECIFIC MINIMUM FUNCTIONS TO BE LISTED BY ANSI/IEEE DEVICE NUMBERS

CONTACTOR.DWG — FULL VOLTAGE NON REVERSING CONTACTOR
'X' DESIGNATES NEMA SIZE OR:
BC: BYPASS CONTACTOR
OC: OUTPUT ISOLATION CONTACTOR
IC: INPUT ISOLATION CONTACTOR

CONTACTOR.DWG — LIGHTING CONTACTOR
-'XX' DESIGNATES AMPERE RATING
-'Y DESIGNATES NUMBER OF POLES

CONTACTOR.DWG — LIGHTING CONTACTOR
-'XX' DESIGNATES AMPERE RATING
-'Y DESIGNATES NUMBER OF POLES

MOTOR OVERLOAD.DWG — MOTOR OVERLOAD.
RATED FOR DEVICE PROTECTING.
CLASS 20 UNLESS OTHERWISE INDICATED.
-'X' DESIGNATES TYPE:
T-THERMAL
E-ELECTRONIC.

FVNR.DWG — FULL VOLTAGE REVERSING CONTACTOR
-'X' DESIGNATES NEMA SIZE.
-'F' INDICATES FORWARD CONTACTOR.
-'R' INDICATES REVERSING CONTACTOR.

2SPEED.DWG — TWO SPEED STARTER
-'X' DESIGNATES NEMA SIZE.
-'H' INDICATES HIGH SPEED CONTACTOR.
-'L' INDICATES LOW SPEED CONTACTOR.

RVAT.DWG — REDUCED VOLTAGE AUTOTRANSFORMER
-'X' DESIGNATES NEMA SIZE.
-'Y' INDICATES TAP PERCENTAGE.

VFD.DWG — VARIABLE FREQUENCY DRIVE.
-'XX' INDICATES MINIMUM AMP RATING (IF NOT SPECIFIED, VFD TO MATCH HORSEPOWER RATING OF MOTOR SUPPLIED).

RVSS.DWG — REDUCED VOLTAGE SOFT START.
-'XX' INDICATES MINIMUM AMP RATING (IF NOT SPECIFIED, RVSS TO MATCH HORSEPOWER RATING OF MOTOR SUPPLIED).

DISC_NF.DWG — NON-FUSED DISCONNECT SWITCH
- 'XX' DESIGNATES AMPERE RATING OF DISCONNECT.
- 'Y' DESIGNATES NUMBER OF POLES

DISC_F.DWG — FUSED DISCONNECT SWITCH
- 'XX' DESIGNATES AMPERE RATING OF FUSE. DISCONNECT AMPERE RATING TO BE EQUAL TO FUSE RATING OR THE NEXT LARGEST TRADE SIZE.
- 'Y' DESIGNATES NUMBER OF POLES

ONE-LINE DIAGRAM

MOTOR_IND.DWG — INDUCTION MOTOR
-'WW' INDICATES EQUIPMENT DESIGNATION.
-'XX' INDICATES HORSEPOWER RATING.

MOTOR_SYNC.DWG — SYNCHRONOUS MOTOR
-'WW' INDICATES EQUIPMENT DESIGNATION.
-'XX' INDICATES HORSEPOWER RATING.

PANELBOARD.DWG — PANELBOARD
- 'X' INDICATES STRUCTURE DESIGNATION.

UPS.DWG — UNINTERRUPTIBLE POWER SUPPLY.

SPD.DWG — SURGE SUPPRESSION DEVICE.

LIGHTNING_ARRESTOR.DWG — LIGHTNING ARRESTORS
- 'XX' INDICATES
  IC: INTERMEDIATE CLASS
  DC: DISTRIBUTION CLASS
  SC: STATION CLASS

EARTH_GROUND.DWG — EARTH GROUND

REACTOR.DWG — LINE OR LOAD REACTOR.
'Z' DESIGNATES % IMPEDANCE.

CAPACITOR.DWG — CAPACITOR
- 'XX' INDICATES kVAR RATING

RESISTOR.DWG — RESISTOR
- 'ZZ' INDICATES IMPEDANCE IN OHMS

MISC_EQ.DWG — MISCELLANEOUS ELECTRICAL EQUIPMENT, SUCH AS PANEL, ETC. EQUIPMENT TYPE AND RATINGS TO BE INDICATED.

ELEC_EQ.DWG — ELECTRICAL EQUIPMENT BOUNDARY. INDICATES MULTIPLE DEVICES ENCLOSED WITHIN BORDER ARE LOCATED WITHIN THE SAME ENCLOSURE, OR MOUNTED TO SAME PANEL RACK.

PWR_CONNECTION.DWG — PORTABLE POWER CONNECTION
-'XX' INDICATES AMPERE RATING
-'Y' DESIGNATES TYPE:
3: 3 WIRE + GROUND
4: 4 WIRE + GROUND

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DESIGNED BY: Samantha Riley
DRAWN BY: Samantha Riley
CHECKED BY: Andrew Gibbs
PROFESSION: ENGINEER
PROJECT ARCHITECT: Andrew Rebecca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED PROFESSIONAL ENGINEER ANDREW K. GIBBS 33994

Andrew Gibbs, P.E.
AL P.E. 33994

SHEET TITLE
ELECTRICAL LEGEND & ABBREVIATIONS 1

SHEET NUMBER.
E001

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LIGHTING

- XX / 2x4.DWG — CEILING MOUNTED FIXTURE. 'XX' DESIGNATES FIXTURE TYPE AS SPECIFIED ON LIGHTING FIXTURE SCHEDULE.
- XX — FIXTURE PROVIDING EMERGENCY ILLUMINATION. 'XX' DESIGNATES FIXTURE TYPE AS SPECIFIED ON LIGHTING FIXTURE SCHEDULE.
- XX — CEILING MOUNTED DOWNLIGHTING FIXTURE. 'XX' DESIGNATES FIXTURE TYPE AS SPECIFIED ON LIGHTING FIXTURE SCHEDULE.
- XX — SURFACE MOUNT OR SUSPENDED FIXTURE INDUSTRIAL STRIP TYPE FIXTURE XX' DESIGNATES FIXTURE TYPE AS SPECIFIED ON LIGHTING FIXTURE SCHEDULE.
- XX XX — WALL MOUNTED FIXTURE. 'XX' DESIGNATES FIXTURE TYPE AS SPECIFIED ON LIGHTING FIXTURE SCHEDULE.
- XX — TRACK LIGHTING. LENGTH AND NUMBER OF FIXTURES AS INDICATED ON PLANS. 'XX' DESIGNATES FIXTURE TYPE AS SPECIFIED ON LIGHTING FIXTURE SCHEDULE.
- XX — TWIN HEAD EMERGENCY BATTERY UNIT. 'XX' DESIGNATES FIXTURE TYPE AS SPECIFIED ON LIGHTING FIXTURE SCHEDULE.
- XX — CEILING MOUNTED REMOTE BATTERY HEADS. AIMING AS INDICATED. 'XX' DESIGNATES FIXTURE TYPE AS SPECIFIED ON LIGHTING FIXTURE SCHEDULE.
- XX — WALL MOUNTED REMOTE BATTERY HEADS. AIMING AS INDICATED. 'XX' DESIGNATES FIXTURE TYPE AS SPECIFIED ON LIGHTING FIXTURE SCHEDULE.
- XX — EXIT SIGN; CEILING MOUNTED; ARROWS AS INDICATED. 'XX' DESIGNATES FIXTURE TYPE AS SPECIFIED ON LIGHTING FIXTURE SCHEDULE.
- XX — EXIT SIGN; WALL MOUNTED; ARROWS AS INDICATED. 'XX' DESIGNATES FIXTURE TYPE AS SPECIFIED ON LIGHTING FIXTURE SCHEDULE.
- EXIT SIGN WITH EMERGENCY HEADS; ARROWS AS INDICATED. 'XX' DESIGNATES FIXTURE TYPE AS SPECIFIED ON LIGHTING FIXTURE SCHEDULE.
- XX XX — POLE MOUNTED LIGHT FIXTURE. 'XX' DESIGNATES FIXTURE TYPE AS SPECIFIED ON LIGHTING FIXTURE SCHEDULE. ONLY SINGLE FIXTURE SHOWN.
- $XX — WALL SWITCH. 'XX' DESIGNATES: NO SUBSCRIPT DENOTES SINGLE POLE; 3 - 3 WAY SWITCH; 4 - 4 WAY SWITCH; D - DIMMER; K - KEY OPERATED; L - WITH PILOT LIGHT; M - MOTOR RATED; O - OCCUPANCY MOTION SENSOR W/OVERRIDE; T - TIMER; AS - DENOTES OCCUPANCY OVERRIDE; CR - CORROSION RESISTANT; EP - EXPLOSION PROOF; TS - TIME SWITCH; WP - WEATHERPROOF
- LC — LIGHTING CONTROL POWER PACK
- X — CEILING MOUNTED SENSOR. 'X' DESIGNATES SENSOR AS SPECIFIED IN THE SENSOR SCHEDULE.
- X — WALL MOUNTED OCCUPANCY SENSOR. 'X' DESIGNATES SENSOR AS SPECIFIED IN THE SENSOR SCHEDULE.

ALL DEVICES/PLATES TO BE IN OWNERS CHOICE OF COLORS.

RACEWAYS

- OVERHEAD ELECTRICAL
- CONDUIT RUN CONCEALED ABOVE CEILING OR IN WALLS
- CONDUIT RUN BELOW GRADE OR IN SLAB
- CONDUIT RUN EXPOSED PARALLEL OR PERPENDICULAR TO BUILDING LINES
- HOMERUN TO PANELBOARD ANY CIRCUIT WITHOUT FURTHER DESIGNATION 2#12, 1#12 GRD. MINIMUM CONDUIT SIZE SHALL BE 3/4"
- FLEXIBLE CONDUIT
- CONDUIT TURNING DOWN
- CONDUIT TURNING UP
- CONDUIT CAPPED
- EXPLOSIONPROOF CONDUIT SEAL
- CONDUIT EXPANSION FITTING
- HH — HAND HOLE (SIZE PER NEC)
- MH — MAN HOLE (SIZE PER NEC)
- PB — PULL BOX (DRAWN TO SCALE ON PLANS)
- CABLE TRAY (DRAWN TO SCALE ON PLANS)
- CONCRETE ENCASED DUCT BANK BELOW GRADE
- W-XXXX-YY — CABLE TAG. DESIGNATIONS: FOR 'W': H - POWER (>5kVAC); M - POWER (601-4999VAC); P - POWER (241-600VAC); L - POWER (51-240VAC); D - DC POWER; C - CONTROL (TO A STARTER); I - INSTRUMENTATION (TO A PLC); E - EMERGENCY SHUT DOWN; F - FIBER OPTIC COMMUNICATIONS; O - OTHER COMMUNICATIONS. FOR 'XXXX': EQUIPMENT REFERENCE. FOR 'YY': ALPHANUMERIC SUFFIX AS NEEDED
- XXX.YYY — RACEWAY TAG. DESIGNATIONS: FOR 'XXX': ELECTRICAL SHEET REFERENCE. FOR 'YY': SEQUENTIAL REFERENCE

GROUNDING & LIGHTNING PROTECTION

- CONNECTION TO GROUND GRID. MECHANICAL OR CADWELD CONNECTION AS NOTED.
- GROUND ROD.
- GROUND TEST STATION.
- GROUND ANODE.
- VEHICLE GROUNDING STATION.
- GROUNDING GRID OR COUNTERPOISE SYSTEM CONDUCTOR.
- LIGHTING PROTECTION AIR TERMINAL.
- LIGHTNING PROTECTION DISSIPATION AIR TERMINAL.
- LIGHTNING PROTECTION SYSTEM CONDUCTOR.
- LIGHTNING PROTECTION SYSTEM DOWN CONDUCTOR.

ELEMENTARY WIRING SCHEMATICS

- PRESSURE SWITCH - NORMALLY OPEN.
- PRESSURE SWITCH - NORMALLY CLOSED.
- DIFFERENTIAL PRESSURE SWITCH - NORMALLY OPEN.
- DIFFERENTIAL PRESSURE SWITCH - NORMALLY CLOSED.
- TIME DELAY SWITCH - TIMER ON DELAY (CLOSES AFTER TIMER EXPIRES).
- TIMER DELAY SWITCH - TIMER OFF DELAY (OPENS AFTER TIMER EXPIRES).
- VIBRATION SWITCH - NORMALLY OPEN
- VIBRATION SWITCH - NORMALLY CLOSED
- X — PANEL MOUNTED INDICATOR LIGHT "X" INDICATES COLOR: A - AMBER; G - GREEN; R - RED; W - WHITE; B - BLUE
- X — PANEL MOUNTED INDICATOR LIGHT 'PUSH TO TEST' TYPE. "X" INDICATES COLOR: A - AMBER; G - GREEN; R - RED; W - WHITE; B - BLUE
- X TB# / X TB# — EXTERNALLY MOUNTED DEVICE. DASHED LINE INDICATES WIRING EXTERNAL TO PANEL.
- X TB# — TERMINAL BLOCK. "X" INDICATES TERMINAL NUMBER. "#" INDICATES TERMINAL BLOCK NUMBER
- PHOTOCELL.
- 00X / X00 — SELECTOR SWITCH. "X" INDICATES SWITCH POSITION. TOTAL DIGITS PER LINE INDICATES NUMBER OF SWITCH POSITIONS (THREE SHOWN).
- MOMENTARY PUSH BUTTON - NORMALLY OPEN
- MOMENTARY PUSH BUTTON - NORMALLY CLOSED
- EMERGENCY SHUTDOWN/STOP - NORMALLY CLOSED
- X — COIL CONTACTS. VOLTAGE AS INDICATED ON SCHEMATICS. "X" DESIGNATES: C - CONTROL RELAY; LC - LIGHTING CONTACTOR; M - MOTOR CONTACTOR; T - TIME DELAY RELAY
- SOLENOID COIL.
- NORMALLY OPEN CONTACT.
- NORMALLY CLOSED CONTACT.
- LIMIT SWITCH - NORMALLY OPEN.
- LIMIT SWITCH - NORMALLY CLOSED.
- LIMIT SWITCH - NORMALLY OPEN, HELD CLOSED.
- LIMIT SWITCH - NORMALLY CLOSED, HELD OPEN.
- LIQUID LEVEL (FLOAT) SWITCH - NORMALLY OPEN.
- LIQUID LEVEL (FLOAT) SWITCH - NORMALLY CLOSED.
- FLOW SWITCH - NORMALLY OPEN.
- FLOW SWITCH - NORMALLY CLOSED.

ELEMENTARY WIRING SCHEMATICS

- TEMPERATURE SWITCH - NORMALLY OPEN.
- TEMPERATURE SWITCH - NORMALLY CLOSED.

OUTLETS AND RECEPTACLES

- XX — DUPLEX RECEPTACLE, MOUNT 18" AFF UNLESS OTHERWISE NOTED.
- XX — QUADPLEX RECEPTACLE, MOUNT 18" AFF UNLESS OTHERWISE NOTED.
- XX — SINGLE OUTLET RECEPTACLE, MOUNT 18" AFF UNLESS OTHERWISE NOTED.
- XX — SPECIAL PURPOSE RECEPTACLE, MOUNT 18" AFF UNLESS OTHERWISE NOTED.

FOR ALL RECEPTACLES, 'XX' DESIGNATES: AC - INSTALL 6" ABOVE COUNTER / BACKSPLASH (GFI REQUIRED); CLG - CEILING MOUNT; CR - CORROSION RESISTANT; EP - EXPLOSION PROOF; GF - GROUND FAULT; WP - WEATHERPROOF

- MULTI-RECEPTACLE ASSEMBLY WITH RECEPTACLES AS INDICATED.
- J — JUNCTION BOX
- FLOOR MOUNTED DUPLEX RECEPTACLE.
- FLOOR MOUNTED BOX POWER AND TELCOM RECEPTACLES.

ALL DEVICES/PLATES TO BE IN OWNERS CHOICE OF COLORS.

COMMUNICATIONS

- WALL MOUNTED DATA OUTLET. 18" AFF UNLESS OTHERWISE NOTED.
- X — FLOOR MOUNTED DATA OUTLET. 'X' DESIGNATES: F - FLUSH; S - SURFACE
- WALL MOUNTED TELEPHONE OUTLET. 18" AFF UNLESS OTHERWISE NOTED.
- X — FLOOR MOUNTED TELEPHONE OUTLET. 'X' DESIGNATES: F - FLUSH; S - SURFACE
- WALL MOUNTED TELEPHONE/DATA COMBINATION OUTLET. 18" AFF UNLESS OTHERWISE NOTED.
- X — FLOOR MOUNTED TELEPHONE/DATA COMBINATION OUTLET. 'X' DESIGNATES: F - FLUSH; S - SURFACE
- B — BLUE INDICATOR LIGHT FOR EMERGENCY CALL BOX.
- C — EMERGENCY CALL BOX.
- L — LANE USE SIGNAL. 18" X 18" LED TYPE WITH GREEN " " AND RED "X".
- X — CCTV CAMERA. MOUNTING AS INDICATED ON PLANS. 'X' DESIGNATES: F - FIXED TYPE; PTZ - PAN TILT ZOOM
- ETHERNET ADAPTER
- CELLULAR MODEM

HVAC

- T — THERMOSTAT
- R — AMBIENT TEMPERATURE TRANSMITTER
- UNIT HEATER

ELEMENTARY WIRING SCHEMATICS

- KEY SWITCH
- RTM — NON RESETTABLE RUN TIME METER.
- BATTERY - VOLUME AND AMP HOURS AS INDICATED.
- AC / DC- / DC- / AC — FULL WAVE RECTIFIER.
- HORN ELEMENT.
- R — EXTERNALLY MOUNTED ALARM LIGHT.

FIRE ALARM

- EVAC — VOICE EVACUATION PANEL
- FAA — FIRE ALARM ANNUNCIATOR PANEL
- FACP — FIRE ALARM CONTROL PANEL
- F — FIRE ALARM MANUAL PULL STATION
- S — FIRE ALARM SMOKE DETECTOR
- H — HEAT DETECTOR
- SD — FIRE ALARM DUCT SMOKE DETECTOR
- F — FIRE ALARM STROBE LIGHT WALL MOUNTED
- F — FIRE ALARM SPEAKER/STROBE LIGHT COMBINATION WALL MOUNTED
- H — HORN UNIT ONLY
- ST / FA — FIRE ALARM STROBE CEILING MOUNTED
- R — FIRE ALARM RELAY
- FE — FIRE EXTINGUISHER.
- FS — FIRE ALARM FLOW SWITCH
- PS — LOW PRESSURE SWITCH
- TS — FIRE ALARM TAMPER SWITCH
- TB — FIRE ALARM TELEPHONE BASE
- SP / WP — MASS NOTIFICATION SPEAKER/STROBE LIGHT COMBINATION (WEATHER PROOF) WALL MOUNTED
- SPT — MASS NOTIFICATION SPEAKER/STROBE COMBINATION CEILING MOUNTED
- SP — MASS NOTIFICATION SPEAKER CEILING MOUNTED

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AFRICATOWN WELCOME CENTER
City of Mobile
1959 Bay Bridge Road Cutoff
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REVISIONS DESCRIPTION

REV	DATE	DESCRIPTION
A	07/17/2023	30% Submission
B	10/02/2023	90% Submission
C	10/27/2023	100% Submission

DATE: 10/27/2023
DESIGNED BY: Samantha Riley
DRAWN BY: Samantha Riley
CHECKED BY: Andrew Gibbs
PROFESSION: ENGINEER
PROJECT ARCHITECT: Anthony Maraca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED PROFESSIONAL ENGINEER ANDREW L. GIBBS No. 33994

Andrew Gibbs, P.E.
AL P.E. 33994

SHEET TITLE
ELECTRICAL LEGEND & ABBREVIATIONS 2

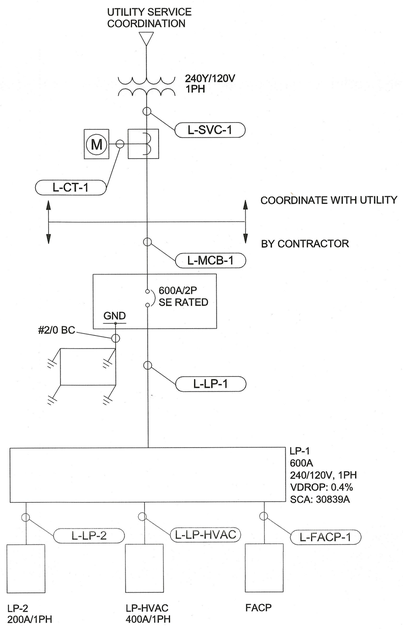
SHEET NUMBER
E002

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ONE-LINE DIAGRAM
NOT TO SCALE

FEEDER MARK	# OF SETS	CONDUIT SIZE	CONDUCTOR IN EACH SET	FROM	TO	NOTES
L-AH-1	1	1"	2#8, 1#8G	LP-HVAC	AH-1	
L-AH-2	1	1-1/2"	2#4, 1#4G	LP-HVAC	AH-2	
L-AH-3	1	1"	2#8, 1#8G	LP-HVAC	AH-3	
L-CT-1	1	-	PER UTILITY	CT CABINET	METER	
L-EF-1	1	1"	1#12, 1#12N, 1#12G	LP-HVAC	EF-1	
L-EF-234	1	1"	1#12, 1#12N, 1#12G	LP-HVAC	EF-2, EF-3, EF-4	
L-EF-567	1	1"	1#12, 1#12N, 1#12G	LP-HVAC	EF-5, EF-6, EF-7	
L-EV-1	1	1"	2#8, 1#8G	LP-2	ELECTRIC VEHICLE CHARGER	
L-EV-2	1	1"	2#8, 1#8G	LP-2	ELECTRIC VEHICLE CHARGER	
L-EWH-1	1	1"	2#8, 1#8G	LP-HVAC	EWH-1	
L-FACP-1	1	1"	1#10, 1#10N, 1#10G	LP-1	FACP	
L-FP-1	1	1"	1#12, 1#12N, 1#12G	LP-1	FOUNTAIN SUBMERSSIBLE PUMP	
L-HP-1	1	1"	2#10, 1#10G	LP-HVAC	HP-1	
L-HP-2	1	1"	2#8, 1#8G	LP-HVAC	HP-2	
L-HP-3	1	1"	2#12, 1#12G	LP-HVAC	HP-3	
L-IT-1	1	1"	2#8, 1#8G	LP-1	IT-1	
L-IT-2	1	1"	2#8, 1#8G	LP-1	IT-2	
L-IWH-1	1	1"	2#8, 1#8G	LP-HVAC	IWH-1	
L-IWH-2	1	1"	2#8, 1#8G	LP-HVAC	IWH-2	
L-LP-1	2	3"	2#350, 1#350N, 1#350G	MCB	LP-1	
L-LP-2	1	2"	2#3/0, 1#3/0N, 1#3/0G	LP-1	LP-2	
L-LP-HVAC	2	2"	2#3/0, 1#3/0N, 1#3/0G	LP-1	LP-HVAC	
L-LTS-1	1	1"	1#10, 1#10N, 1#10G	LP-2	EXTERIOR POLE LIGHTS	
L-LTS-101A	1	1"	1#12, 1#12N, 1#12G	LP-2	LTS RM 101, 110, 111	
L-LTS-101B	1	1"	1#12, 1#12N, 1#12G	LP-2	LTS RM 101, 110, 111	
L-LTS-105	1	1"	1#12, 1#12N, 1#12G	LP-2	LTS RM 105, 107, 125	
L-LTS-109	1	1"	1#12, 1#12N, 1#12G	LP-2	LTS RM 108, 109, 123, 124	
L-LTS-118	1	1"	1#12, 1#12N, 1#12G	LP-2	LTS RM 112, 114, 116, 117, 118	
L-LTS-121	1	1"	1#12, 1#12N, 1#12G	LP-2	LTS RM 113, 119, 120, 121	
L-LTS-2	1	1"	1#10, 1#10N, 1#10G	LP-2	EXTERIOR WALKWAY BOLLARD	
L-LTS-3	1	1"	1#12, 1#12N, 1#12G	LP-2	COLUMN SCONCE LIGHTS	
L-LTS-4	1	1"	1#12, 1#12N, 1#12G	LP-2	FLAGPOLE LIGHTS	
L-LTS-EX	1	1"	1#12, 1#12N, 1#12G	LP-2	EXIT SIGNS	
L-MAG-1	1	1"	1#12, 1#12N, 1#12G	LP-1	MAGNETIC LOCK BATHROOMS	
L-MAG-2	1	1"	1#12, 1#12N, 1#12G	LP-1	MAGNETIC LOCK FRONT DOOR	
L-MAG-3	1	1"	1#12, 1#12N, 1#12G	LP-1	MAGNETIC LOCK IT ROOM	
L-MCB-1	2	3"	3#350, 1#350N	UTILITY	MCB	
L-REC-101A	1	1"	1#12, 1#12N, 1#12G	LP-1	REC RM 101	
L-REC-101B	1	1"	1#12, 1#12N, 1#12G	LP-1	REC RM 101	
L-REC-101C	1	1"	1#12, 1#12N, 1#12G	LP-1	REC RM 101	
L-REC-101D	1	1"	1#12, 1#12N, 1#12G	LP-1	REC RM 101	
L-REC-105	1	1"	1#12, 1#12N, 1#12G	LP-1	REC INSIDE FOUNTAIN	
L-REC-108A	1	1"	1#12, 1#12N, 1#12G	LP-1	REC RM 108, 123	
L-REC-108B	1	1"	1#12, 1#12N, 1#12G	LP-1	REC RM 108	
L-REC-109	1	1"	1#12, 1#12N, 1#12G	LP-1	REC RM 109	
L-REC-110	1	1"	1#12, 1#12N, 1#12G	LP-1	REC RM 110	
L-REC-112	1	1"	1#12, 1#12N, 1#12G	LP-1	REC RM 111, 112, 113	
L-REC-115	1	1"	1#12, 1#12N, 1#12G	LP-1	REC RM 114, 115, 118, 120, 121	
L-REC-125	1	1"	1#12, 1#12N, 1#12G	LP-1	REC RM 125	
L-REC-200	1	1"	1#12, 1#12N, 1#12G	LP-1	OUTSIDE EAST RECS	
L-REC-201	1	1"	1#12, 1#12N, 1#12G	LP-1	OUTSIDE NORTH RECS	
L-REC-202	1	1"	1#12, 1#12N, 1#12G	LP-1	OUTSIDE COLUMN REC	
L-REC-203	1	1"	1#12, 1#12N, 1#12G	LP-1	OUTSIDE COLUMN REC	
L-REC-204	1	1"	1#12, 1#12N, 1#12G	LP-1	OUTSIDE COLUMN REC	
L-REC-205	1	1"	1#12, 1#12N, 1#12G	LP-1	OUTSIDE COLUMN REC	
L-REC-206	1	1"	1#12, 1#12N, 1#12G	LP-1	OUTSIDE WATER FOUNT	
L-REC-207	1	1"	1#12, 1#12N, 1#12G	LP-1	OUTSIDE COLUMN REC	
L-REC-208	1	1"	1#12, 1#12N, 1#12G	LP-1	OUTSIDE SOUTH REC	
L-REC-FR	1	1"	1#12, 1#12N, 1#12G	LP-1	REC FRIDGE	
L-REC-MW1	1	1"	1#12, 1#12N, 1#12G	LP-1	REC MICROWAVE 1	
L-REC-MW2	1	1"	1#12, 1#12N, 1#12G	LP-1	REC MICROWAVE 2	
L-SGN-1	1	1"	1#12, 1#12N, 1#12G	LP-2	OUTSIDE SIGNAGE	
L-SGN-2	1	1"	1#12, 1#12N, 1#12G	LP-2	OUTSIDE SIGNAGE	
L-SVC-1	2	3"	3#350, 1#350N	APC XFMR	CT CABINET	

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REVISIONS DESCRIPTION	DATE	REV
30% Submission	07/17/2023	A
90% Submission	10/02/2023	B
100% Submission	10/27/2023	C

DATE: 10/27/2023
DESIGNED BY: Samantha Riley
DRAWN BY: Samantha Riley
CHECKED BY: Andrew Gibbs
PROFESSION: ENGINEER
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED PROFESSIONAL ENGINEER ANDREW K. GIBBS No. 33994
Andrew Gibbs, P.E.
AL P.E. 33994

SHEET TITLE
ONE LINE AND CONDUIT SCHEDULE

SHEET NUMBER
E100

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PANEL: LP-1

VOLTS L-L:	240 V	MAIN OVERCURRENT:	600 A	BUS MATERIAL:	COPPER
VOLTS L-N:	120 V	MAIN BUS RATING:	600 A	NUETRAL SIZE:	100%
PHASE:	1	MINIMUM AIC:	10000		
WIRE:	3				

LOCATION:	MECH ROOM 105
MOUNTING:	SURFACE
ENCLOSURE TYPE:	NEMA 1
GROUND:	100%

LOAD DATA:

CKT#	BKR.	POLE	DESCRIPTION	A		B		DESCRIPTION	POLE	BKR.	CKT#
1	20 A	1	REC RM 105	720 VA	180 VA			REC MICROWAVE 1	1	20 A	2
3	20 A	1	REC RM 108, 123			900 VA	1080 VA	REC RM 101	1	20 A	4
5	20 A	1	REC FRIDGE	180 VA	3000 VA			IT RACK REC	1	30 A	6
7	20 A	1	REC RM 110			1440 VA	1620 VA	REC GFCI RM 114, 115, 116, 119, 120, 121	1	20 A	8
9	20 A	1	GFCI REC	180 VA	1000 VA			FACP	1	20 A	10
11	20 A	1	REC RM 111, 112, 113			1800 VA					12
13	20 A	1	HVAC	300 VA	24090...			LP-HVAC	2	300 A	14
15	200 A	2	LP-2			8906 VA	24055...	--	--	--	16
17	--	--	--	10047...	180 VA			GFCI REC	1	20 A	18
19	20 A	1	REC MICROWAVE 2			180 VA	180 VA	REC GFCI OUTDOOR WATER FOUNTAINS	1	20 A	20
21	20 A	1	PUMP FOR FOUNTAIN	100 VA	180 VA			GFCI REC	1	20 A	22
23	20 A	1	REC INDOOR WATER FOUNTAINS			180 VA	180 VA	GFCI REC	1	20 A	24
25	20 A	1	FRONT DOOR MAG LOCK	100 VA	360 VA			GFCI REC	1	20 A	26
27	20 A	1	GFCI REC			180 VA	360 VA	REC RM 108	1	20 A	28
29	20 A	1	IT ROOM MAG LOCK	100 VA	540 VA			GFCI REC	1	20 A	30
31	20 A	1	GFCI REC			540 VA	1080 VA	REC RM 125	1	20 A	32
33	20 A	1	IT ROOM DEDICATED REC	180 VA	1080 VA			REC RM 101 FLOOR	1	20 A	34
35	20 A	1	REC RM 109			900 VA					36
37					1080 VA			REC RM 101	1	20 A	38
39											40
41											42
			TOTAL CONNECTED LOAD (VA) PER PHASE:	42895 VA		42670 VA					
			TOTAL CONNECTED LOAD (AMPS) PER PHASE:	357 A		356 A					

TOTAL CONNECTED LOAD (VA):	85532 VA	TOTAL DEMAND LOAD(VA):	85532 VA
TOTAL CONNECTED LOAD (AMPS):	356 A	TOTAL DEMAND LOAD (AMPS):	356 A

NOTES:

1. DEMAN LOAD CALCULATIONS BASED ON REMOVING REDUNDANT LOADING AND RECEPTACLES VA.
2. PROVIDE MANUFACTURER'S STANDARD SPD.
3. FACP CIRCUIT BREAKER SHALL BE MARKED RED AND LOCKED.

1

PANEL: LP-HVAC

VOLTS L-L:	240 V	MAIN OVERCURRENT:	400 A	BUS MATERIAL:	COPPER
VOLTS L-N:	120 V	MAIN BUS RATING:	400 A	NUETRAL SIZE:	100%
PHASE:	1	MINIMUM AIC:	10000		
WIRE:	3				

LOCATION:	MECH ROOM 105
MOUNTING:	SURFACE
ENCLOSURE TYPE:	NEMA 1
GROUND:	100%

LOAD DATA:

CKT#	BKR.	POLE	DESCRIPTION	A		B		DESCRIPTION	POLE	BKR.	CKT#
1	20 A	1	EF-1	30 VA	160 VA			EF-5, EF-6, EF-7	1	20 A	2
3	20 A	1	EF-2, EF-3, EF-4			155 VA					4
5	30 A	2	EWH-1	1250 VA	1275 VA			HP-3	2	25 A	6
7	--	--	--			1250 VA	1275 VA	--	--	--	8
9	30 A	2	HP-1	1525 VA	2375 VA			AH-3	2	30 A	10
11	--	--	--			1525 VA	2375 VA	--	--	--	12
13	50 A	2	HP-2	2725 VA	4750 VA			AH-1	2	50 A	14
15	--	--	--			2725 VA	4750 VA	--	--	--	16
17	80 A	2	AH-2	5000 VA							18
19	--	--	--			5000 VA	2500 VA	IWH-1	2	40 A	20
21	40 A	2	IWH-2	2500 VA	2500 VA			--	--	--	22
23	--	--	--			2500 VA					24
25											26
27											28
29											30
31											32
33											34
35											36
37											38
39											40
41											42
			TOTAL CONNECTED LOAD (VA) PER PHASE:	24090 VA		24055 VA					
			TOTAL CONNECTED LOAD (AMPS) PER PHASE:	201 A		200 A					

TOTAL CONNECTED LOAD (VA):	48145 VA	TOTAL DEMAND LOAD(VA):	48145 VA
TOTAL CONNECTED LOAD (AMPS):	201 A	TOTAL DEMAND LOAD (AMPS):	201 A

NOTES:

1. DEMAND LOAD CALCULATIONS BASED ON REMOVING REDUNDANT LOADING AND RECEPTACLES VA.
2. PROVIDE MANUFACTURER'S STANDARD SPD.

PANEL: LP-2

VOLTS L-L:	240 V	MAIN OVERCURRENT:	200 A	BUS MATERIAL:	COPPER
VOLTS L-N:	120 V	MAIN BUS RATING:	200 A	NUETRAL SIZE:	100%
PHASE:	1	MINIMUM AIC:	10000		
WIRE:	3				

LOCATION:	MECH ROOM 105
MOUNTING:	SURFACE
ENCLOSURE TYPE:	NEMA 1
GROUND:	100%

LOAD DATA:

CKT#	BKR.	POLE	DESCRIPTION	A		B		DESCRIPTION	POLE	BKR.	CKT#
1	20 A	1	LIGHTING RM 112, 114, 116, 117, 118	360 VA	348 VA			LIGHTING RM 101	1	20 A	2
3	20 A	1	LIGHTING RM 101, 110, 111			518 VA	651 VA	LIGHTING RM 105, 107, 125	1	20 A	4
5	20 A	1	LIGHTING RM 113, 115, 120, 121	293 VA	459 VA			LIGHTING RM 108, 109, 123, 124	1	20 A	6
7	20 A	1	EXIT SIGNS			0 VA	100 VA	EXTERIOR BLDG SIGN	1	20 A	8
9	20 A	1	EXTERIOR BLDG SIGN	100 VA	592 VA			LIGHTING POLE	1	20 A	10
11	20 A	1	LIGHTING BOLLARDS			760 VA	1440 VA	LIGHTING WALL SCONCE	1	20 A	12
13	20 A	1	LIGHTING FLAG POLE	120 VA	3350 VA			ELECTRIC VEHICLE CHARGER 1	2	40 A	14
15	40 A	2	ELECTRIC VEHICLE CHARGER 2			3350 VA	3350 VA	--	--	--	16
17	--	--	--	3350 VA							18
19											20
21											22
23											24
25											26
27											28
29											30
31											32
33											34
35											36
37											38
39											40
41											42
			TOTAL CONNECTED LOAD (VA) PER PHASE:	8906 VA		10047 VA					
			TOTAL CONNECTED LOAD (AMPS) PER PHASE:	74 A		79 A					

TOTAL CONNECTED LOAD (VA):	18952 VA	TOTAL DEMAND LOAD(VA):	18952 VA
TOTAL CONNECTED LOAD (AMPS):	79 A	TOTAL DEMAND LOAD (AMPS):	79 A

NOTES:

1. DEMAN LOAD CALCULATIONS BASED ON REMOVING REDUNDANT LOADING AND RECEPTACLES VA.
2. PROVIDE MANUFACTURER'S STANDARD SPD.

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C	06/19/2024	100% Submission
1		Permitting Resubmit 2.

DATE: 10/27/2023
DESIGNED BY: Samantha Riley
DRAWN BY: Samantha Riley
CHECKED BY: Andrew Gibbs
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED No. 28994 PROFESSIONAL ENGINEER ANDREW K. GIBBS

SHEET TITLE
PANEL SCHEDULES

SHEET NUMBER
E101

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LIGHTING FIXTURE SCHEDULE

MARK	MANUFACTURER	CATALOG NUMBER.	LAMPS-NUMBER/ TYPE	FIXTURE WATTS	LUMEN OUTPUT	TOTAL LLF	CCT	MOUNTING	REMARKS
C1	LITHONIA LIGHTING	LDN6 35 05 LO6WR	LED	6	478	0.8	3500K	CEILING	
C2	LITHONIA LIGHTING	LDN6 35 10 LO6WR	LED	35	3373	0.8	3500K	CEILING	
C3	KENALL	MR17FFL-PP-DB-25L35K-DV	LED	25	2941	0.8	3500K	CELING	
G1	LITHONIA LIGHTING	2BLT2 20L ADSM 120 GZ10 LP835	LED	17	2023	0.8	3500K	GRID CEILING	
G2	LITHONIA LIGHTING	2BLT2 33L ADSM 120 GZ10 LP835	LED	23	1815	0.8	3500K	GRID CEILING	
S1	LITHONIA LIGHTING	UFIT L46 6000 SEF 120 GZ10 35K 80CRI	LED	45	5593	0.8	3500K	CEILING	
T1	EUREKA LIGHTING	4282-P10 LED.HO 3500K 90 120 DP ME CLR	LED	26	2554	0.8	3500K		SEE ARCH FOR MOUNTING
T2	EUREKA LIGHTING	4281-P04 LED 90 120V DDV CFR	LED	21	1681	0.8	3500K		SEE ARCH FOR MOUNTING
T3	EUREKA LIGHTING	4581 LED 35 90 120V DP CFR	LED	21	1681	0.8	3500K		SEE ARCH FOR MOUNTING
T4	EUREKA LIGHTING	74280-L05 LED 35 90 120V DP	LED	56	3402	0.8	3500K		SEE ARCH FOR MOUNTING
T5	EUREKA LIGHTING	4581 LED 35 90 120V DP CFR	LED	21	1681	0.8	3500K	CEILING	
W1	ALW	RLP1 S2 LOW 3500K 80	LED	10	657	0.8	3500K	WALL	
W2	LUMINIS	SY302 L2L10 R40 120V BZT R9 2K3	LED	25	1849	0.8	3000K	PILLAR 10'	
EX1	EMERGI-LITE	PRESTIGE X40	LED	2.3	NA	NA	NA	SEE PLANS	
P1	LITHONIA LIGHTING	DSX0 LED P3 30K 70CRI T5M	LED	69	8811	0.8	3000K	25' POLE	BACK TO BACK
P2	LITHONIA LIGHTING	DSX0 LED P3 30K 70CRI T4M	LED	69	8564	0.8	3000K	25' POLE	
P3	LITHONIA LIGHTING	DSX0 LED P3 30K 70CRI T3M	LED	69	8439	0.8	3000K	25' POLE	
B1	LUMINIS	MA30-L1W12-R4	LED	12.5	1281	0.8	3000K	4'	BOLLARD
B2	LUMINIS	LN602-L2L40-8382-106-K30-TYP3-LNP6120-120V-BZT-LPN6120-148	LED	106	8382	0.8	3000K	148"	FLAG POLE BOLLARD
L1	LUMINIS	SC655 L1L15 R55 120V K35 P290	LED	15	1599	0.8	4000K	POLE TOP	TWO AT 90 DEGREES
L2	LUMINIS	SC850 L1L20 R30 120V K35	LED	22	2157	0.8	4000K	GROUND	

NOTES

1. THE FIXTURES LISTED ABOVE ARE THE BASIS OF DESIGN. TO SUPPLY EQUIVALENT FIXTURES PROVIDE THE FOLLOWING WITH BID DOCUMENTS:
   1) COMPLETE PRODUCT SPECIFICATION SHEETS MARKED WITH CATALOG NUMBER AND FIXTURE TYPE,
   2) CALCULATION REPORTS SHOWING THE DESIGN CRITERIA HAS BEEN MET,
   3) A SUMMARY OF ALL ALTERATIONS DEVIATING FROM THE BASIS OF DESIGN,
   4) ELECTRONIC COPES OF THE IES FILES USED,
   5) WRITTEN VERIFICATION THAT THE SUBMITTED FIXTURES MEET THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
   EQUIVALENT FIXTURES SHALL BE VERIFIED BY THE ENGINEER FOR ADEQUACY DURING THE BID REVIEW PHASE. THE CONTRACTOR SHALL STILL BEAR THE RESPONSIBILITY OF PROVIDING AND INSTALLING FIXTURES THAT MEET THE DESIGN CRITERIA AND THE QUALITY OF THE BASIS OF DESIGN PRODUCTS, AT NO ADDITIONAL COST.
2. FIXTURE WATTAGE IS BASED ON THE TOTAL INPUT POWER AS LISTED BY THE MANUFACTURERS DATA FOR THE LAMP(S) AND BALLAST (DRIVERS) SELECTED.
3. COORDINATE MOUNTING REQUIREMENTS AS SHOWN ON THE PLAN.
4. FIXTURES ON PLANS OR LAYOUTS WITH "-EM" SUFFIX INDICATE REQUIREMENT FOR INCLUSION OF EMERGENCY BATTERY PACK WITH HIGHEST LUMEN OUTPUT, UNLESS OTHERWISE NOTED.

LIGHTING DESIGN CRITERIA

APPLICATION	HORIZONTAL TARGETS			VERTICAL TARGETS			UNIFORMITY TARGETS	
	E (fc)	TYPE	ELEV.	E (fc)	TYPE	ELEV.	MAX:MIN	AVG:MIN
BATHROOMS	5	AVG	0' AFF	N/A	N/A	3'-5"	2:1	
BREAKROOM	10	AVG	2'-6" AFF	3	AVG	4'-0" AFF	N/A	3:1
BUILDING ENTRIES	1	AVG	0' AFF	N/A	N/A	N/A	3:1	
CONFERENCE	30	AVG	2'-6" AFF	40	AVG	3'-5" AFF	N/A	1.5:1
CORRIDOR	5	AVG	FLOOR	3	AVG	5'-0" AFF	N/A	2:1
ELECTRICAL ROOM	50	AVG	0' AFF	20	N/A	4' AFF	3:1	
FLAG POLE	N/A	N/A	N/A	2	AVG	N/A	10:1	3:1
JANITOR	10	AVG	FLOOR	3	AVG	4'-0" AFF	N/A	3:1
MECHANICAL	20	AVG	3'-0" AFF	15	AVG	5'-0" AFF	N/A	3:1
OFFICE	30	AVG	0' AFF	N/A	N/A	N/A	5:1	
OUTDOOR SITE LIGHTING	0.5	MIN	FLOOR	N/A	MIN	N/A	15:1	N/A
PARKING LOTS	1	AVG	0' AFF	N/A	N/A	N/A	10:1	
SIGNAGE	N/A	N/A	N/A	1	AVG	N/A	10:1	3:1
STORAGE	10	AVG	FLOOR	3	AVG	4'-0" AFF	N/A	3:1

NOTES:

1. DESIGN CRITERIA ARE BASED ON THE IES LIGHTING HANDBOOK, 10TH EDITION.

LIGHTING SENSOR SCHEDULE

MARK	MANUFACTURER	CATALOG NUMBER.	FUNCTIONS	MOUNTING	REMARKS
D	ACUITY	NCM PDT 10 RJB ADCX	DUAL TECHNOLOGY PIR AND ULTRASONIC WITH PHOTODETECTION AND DIMMING DAYLIGHT SENSOR	CEILING	
LC	ACUITY	NPP16 DS EFP	LIGHTING CONTACTOR RELAY PACK	CONCEALED	
$O	ACUITY	NWSX PDT LV DX WH	DUAL TECHNOLOGY PIR AND ULTRASONIC WITH PHOTODETECTION AND DIMMING WALL SWITCH	WALL 4' AFF	
O	ACUITY	NCM PDT 10 RJB ADCX	DUAL TECHNOLOGY PIR AND ULTRASONIC WITH PHOTODETECTION AND DIMMING OCCUPANCY SENSOR	CEILING	

1. THE DEVICES LISTED ABOVE ARE THE BASIS OF DESIGN. EQUIVALENT DEVICES MAY BE SUPPLIED. TO SUPPLY EQUIVALENT FIXTURES PROVIDE THE FOLLOWING WITH BID DOCUMENTS:
   1) COMPLETE PRODUCT SPECIFICATION SHEETS MARKED WITH CATALOG NUMBER AND DEVICE TYPES,
   2) A SUMMARY OF ALL ALTERATIONS DEVIATING FROM THE BASIS OF DESIGN.
   SHOULD CHANGES IN THE CONTROL WIRING BE REQUIRED, THE VENDOR SHALL COORDINATE WITH THE CONTRACTOR TO PROVIDE THE REQUIRED WIRING. THE CONTRACTOR SHALL STILL BEAR THE RESPONSIBILITY OF PROVIDING AND INSTALLING DEVICES THAT MEET THE DESIGN CRITERIA, AT NO ADDITIONAL COST.
2. PROVIDE A SENSOR LAYOUT STUDY WITH SUBMITTAL DRAWINGS. INCLUDE COMPLETE COVERAGE FOR EACH SPACE AND ALL REQUIRED DEVICES.
3. COORDINATE SUPPLY OF ALL SWITCHES.

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A	07/17/2023	30% Submission
B	10/02/2023	90% Submission
C	10/27/2023	100% Submission

DATE: 10/27/2023
DESIGNED BY: Samantha Riley
DRAWN BY: Samantha Riley
CHECKED BY: Andrew Gibbs
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Maraca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED PROFESSIONAL ENGINEER ANDREW K. GIBBS No. 33984 10/27/23

SHEET TITLE
LIGHTING SCHEDULES

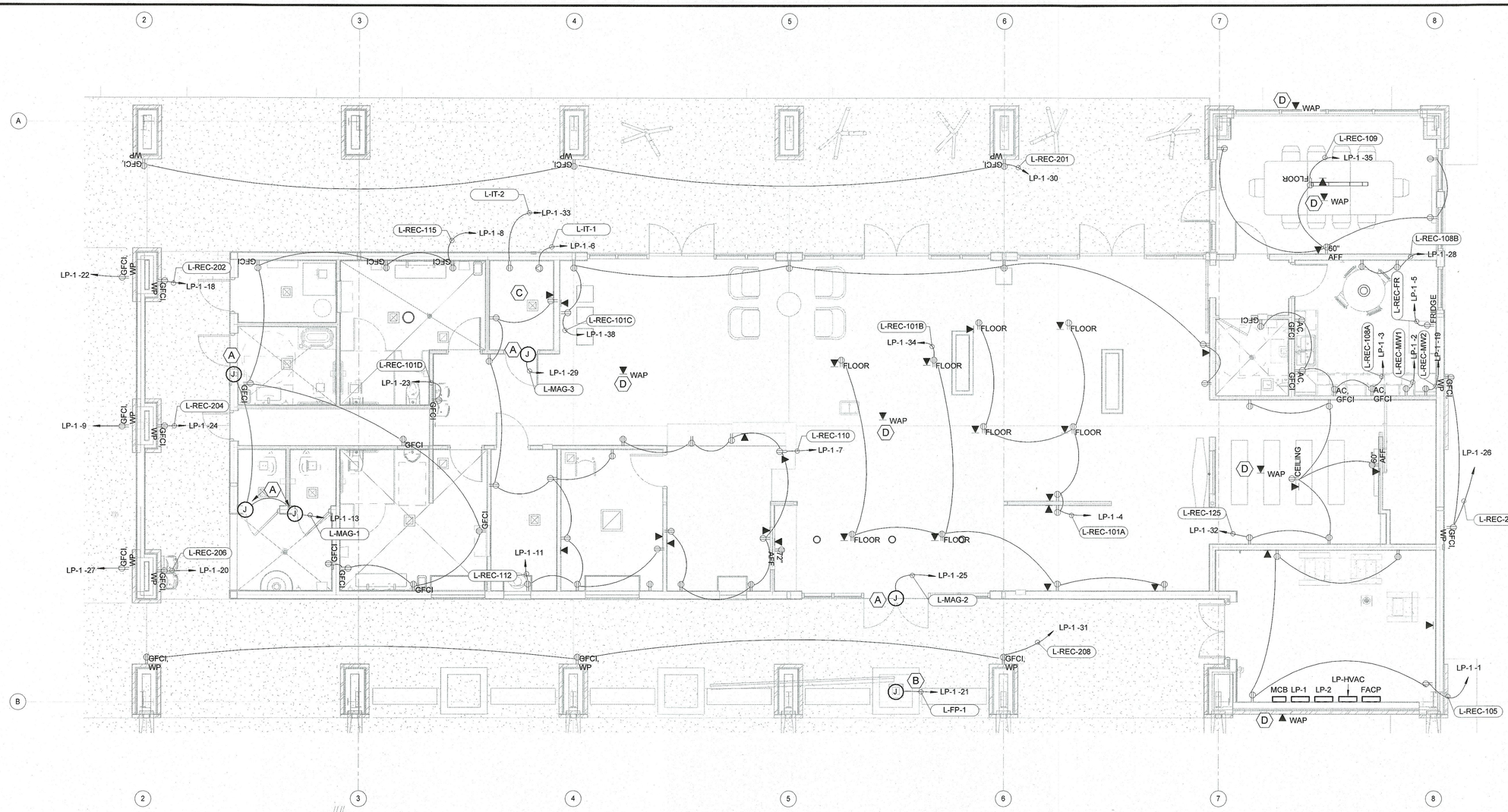
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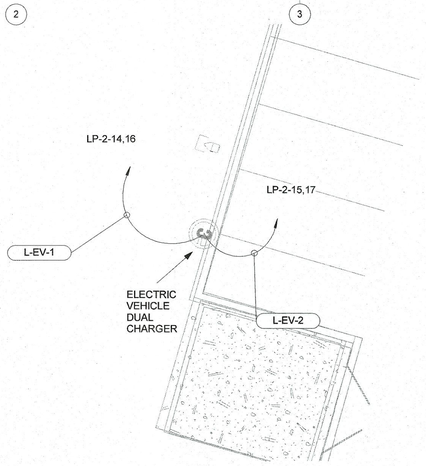
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1 POWER PLAN
3/16" = 1'-0"



2 SITE EV CHARGER
1" = 10'-0"

GENERAL NOTES:

1. THE CONTRACTOR SHALL COORDINATE THE FINAL LOCATION OF POWER OUTLETS WITH THE FINAL LOCATION OF THE NETWORK RACK (CONTRACTOR FURNISHED AND CONTRACTOR INSTALLED) PRIOR TO ROUGH IN. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER AND PROVIDE AND INSTALL A WIRE MANAGEMENT SYSTEM IN ACCORDANCE WITH INDUSTRY STANDARDS. COORDINATE LOCATION OF CABLE TRAY WITH FINAL LOCATION OF NETWORK RACK.
2. FOR COMMUNICATIONS OUTLET, PROVIDE A DEEP 4" SQUARE BOX WITH 3/4" CONDUIT AND BUSHINGS ON BOTH ENDS TO ACCESSIBLE AREA ABOVE THE CEILING. PROVIDE 2 CAT5E CABLES FROM THE DEVICE LOCATION TO THE NETWORK RACK. MOUNT AT 18" AFF UNLESS OTHERWISE NOTED. THE ELECTRICAL CONTRACTOR IS TO INSTALL, TERMINATE, TEST(QUALIFIED FOR 1 GIG) AND LABEL ALL CABLING FROM THE NETWORK RACK TO THE WALL DEVICES. THE CONTRACTOR SHALL UTILIZE TIA WIRING STANDARD-B FOR TERMINATING THE CAT5E CABLES. TWO CABLES TO BE RUN PER WALL JACK . TWO PORT FACEPLATES SHALL BE USED IN ALL LOCATIONS WITH EACH PLATE LABELED TO SHOW WHICH PORT IT CONNECTS TO IN THE IT ROOM. THE CITY OF MOBILE UTILIZES THE COM-SCOPE 108232703 CAT5E JACK. DEVICE PLATES ARE TO BE APPROVED BY OWNER.
3. A TELEVISION COAXIAL OUTLET IS TO BE MOUNTED AT THE TELEVISION. COORDINATE EXACT LOCATION WITH THE ARCHITECT AND OWNER PRIOR TO ROUGH IN. PROVIDE AND INSTALL AN RG-6 CABLE FROM THE DEVICE LOCATION TO THE CABLE TV DISTRIBUTION POINT.
4. INSTALL TWIST AND LOCK NEMA L5-30R PLUGS AT IT SERVER RACK.
5. INSTALL TWO(2) 2" SPARE CONDUITS IN SCH 40 PVC FROM IT ROOM TO NEW 24"x36"x24" POLYMER CONCRETE HANDHOLE WITH TIER 2 LID IN GRASSY AREA PLAN NORTH FOR FUTURE USE. INSTALL TWO(2) 2" SPARE CONDUITS IN SCH 40 PVC FROM IT ROOM TO NEW 24"x36"x24" POLYMER CONCRETE HANDHOLE WITH TIER 2 LID IN GRASSY AREA SOUTH OF MONUMENT SIGN PLAN EAST FOR FUTURE USE. INCLUDE THE INSCRIPTION "FIBER OPTIC" ON EACH LID.
6. EIA/TIA 568B CABLING STANDARD SHALL BE USED FOR ALL CAT-5E CABLES. SEE SPECIFICATIONS FOR MORE DETAIL. PROPER CABLE MANAGEMENT SHALL BE USED FOR A NEAT AND TIDY APPEARANCE OF THE CABLES.
7. THE OWNER IS TO BE CONSULTED BEFORE INSTALLING EQUIPMENT.

KEYNOTES:

A. JUNCTION BOXES TO BE INSTALLED FOR MAGNETIC LOCKS.
B. POWER FOR SUBMERSSIBLE FOUNTAIN PUMP
C. 19" RACK TO BE BOLTED TO THE FLOOR. NETWORK SWITCH SHALL BE ARUBA R8Q67A 6200M 24 OR 48G 4SFP+ LAYER 3. INCLUDE CAT5 E PATCH PANEL ALLEN TEL AT55B-PNL-24. INCLUDE APC SMART 1500VA UPS FOR IT RACK. SEE SPECIFICATIONS FOR ADDITIONAL DETAIL.
D. INSTALL CAT 5E CABLE TO THIS LOCATION FOR FUTURE WIFI. ADD 50' OF CABLE AT EACH LOCATION.

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REVISIONS DESCRIPTION	REV	DATE
30% Submission	A	07/17/2023
90% Submission	B	10/02/2023
100% Submission	C	10/27/2023

DATE: 10/27/2023
DESIGNED BY: Samantha Riley
DRAWN BY: Samantha Riley
CHECKED BY: Andrew Gibbs
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED PROFESSIONAL ENGINEER ANDREW K. GIBBS
No. 33994
10/27/2023

SHEET TITLE

POWER AND AUXILLARY PLAN

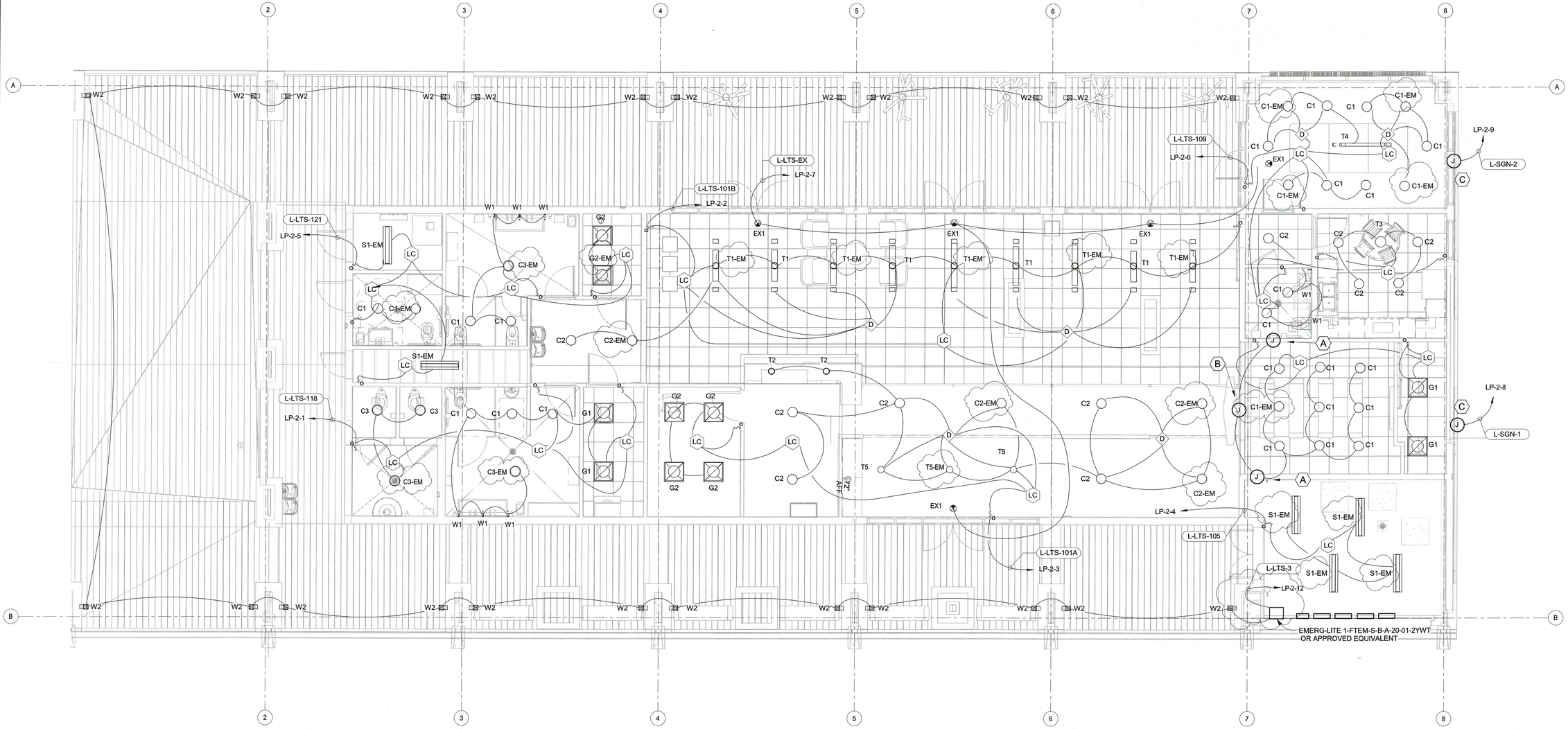
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GENERAL NOTES:

1. THE SENSORS AMD SWITCHES SHOWN ON THESE PLANS ARE A REPRESENTITIVE DESIGN. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SELECTED LIGHTING EQUIPMENT MANUFACTURER'S REPRESENTITIVE TO COORDINATE REQUIRED VARIATIONS FOR THE SELECTED DEVICES TO FUNCTION AS REQUIRED.

KEYNOTES

A. COORDINATE LOCATION FOR JUNCTION BOX FOR BASEBOARD LIGHTS
B. COORDINATE LOCATION FOR JUNCTION BOX FOR LIT SIGNAGE
C. COORDINATE LOCATION FOR OUTSIDE DIGITAL SIGNAGE

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B	10/02/2023	90% Submission
C	10/27/2023	100% Submission

DATE: 10/27/2023
DESIGNED BY: Samantha Riley
DRAWN BY: Samantha Riley
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PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED No. 33994 PROFESSIONAL ENGINEER ANDREW K. GIBBS

SHEET TITLE
LIGHTING PLAN

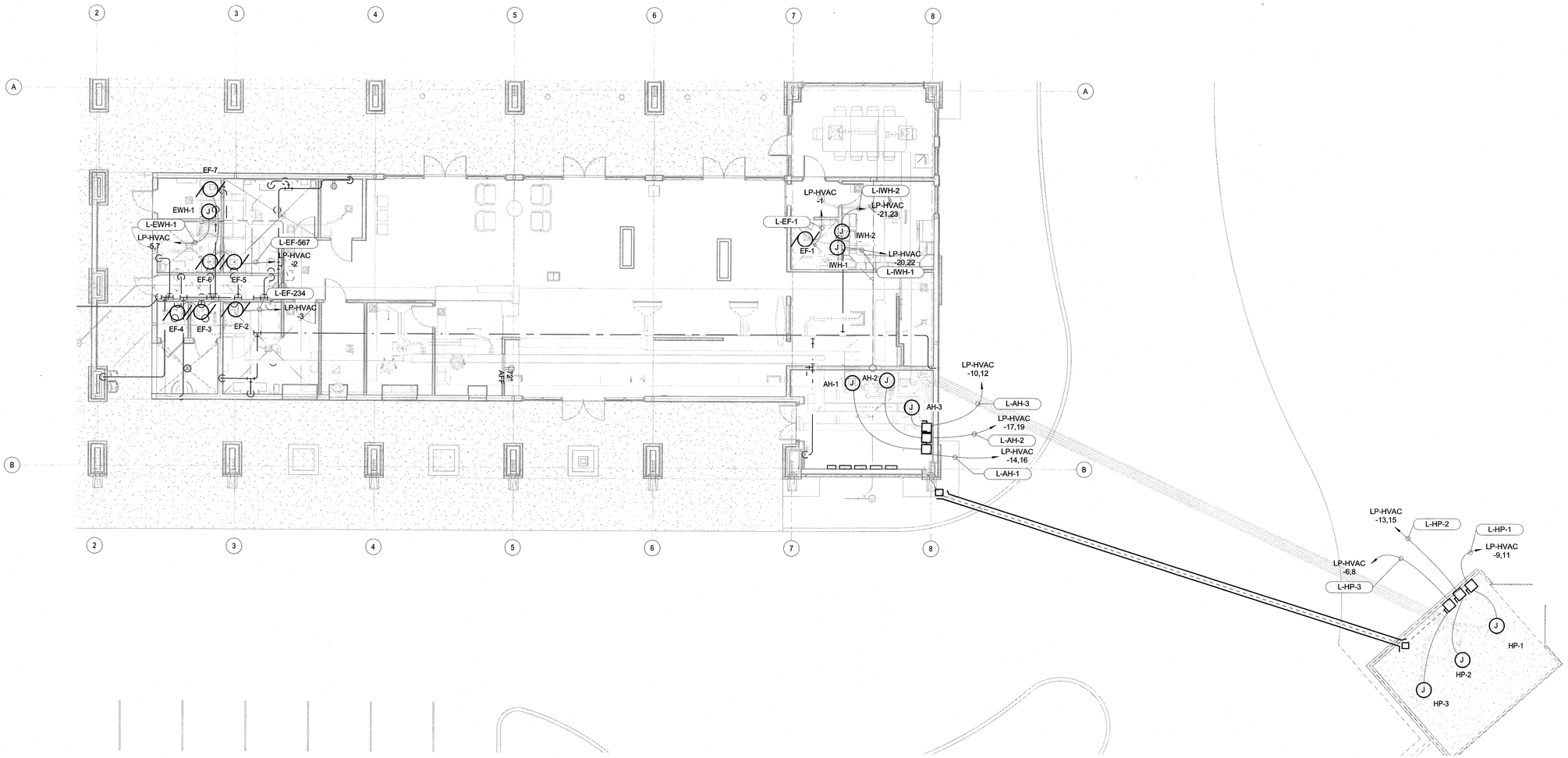
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GENERAL NOTES:

1. ALL CONTROL WIRING FOR MECHANICAL SHALL BE GOVERNED BY DIVISION 26 REQUIREMENTS. ALL CONTROL WIRING SHALL BE IN COMPLIANCE WITH THE SPECIFICATIONS. COORDINATE WIRING REQUIREMENTS WITH THE MANUFACTURER OF THE EQUIPMENT AND PROVIDE CONTROL WIRING REQUIRED FOR THE OPERATION OF EQUIPMENT.

ge

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30% Submission	07/17/2023	A
90% Submission	10/02/2023	B
100% Submission	10/27/2023	C

DATE: 10/27/2023
DESIGNED BY: Samantha Riley
DRAWN BY: Samantha Riley
CHECKED BY: Andrew Gibbs
PROFESSION: ENGINEER
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED PROFESSIONAL ENGINEER ANDREW K. GIBBS No. 33994

Andrew Gibbs, P.E.
AL P.E. 33994

SHEET TITLE

HVAC ELECTRICAL PLAN

SHEET NUMBER

E203

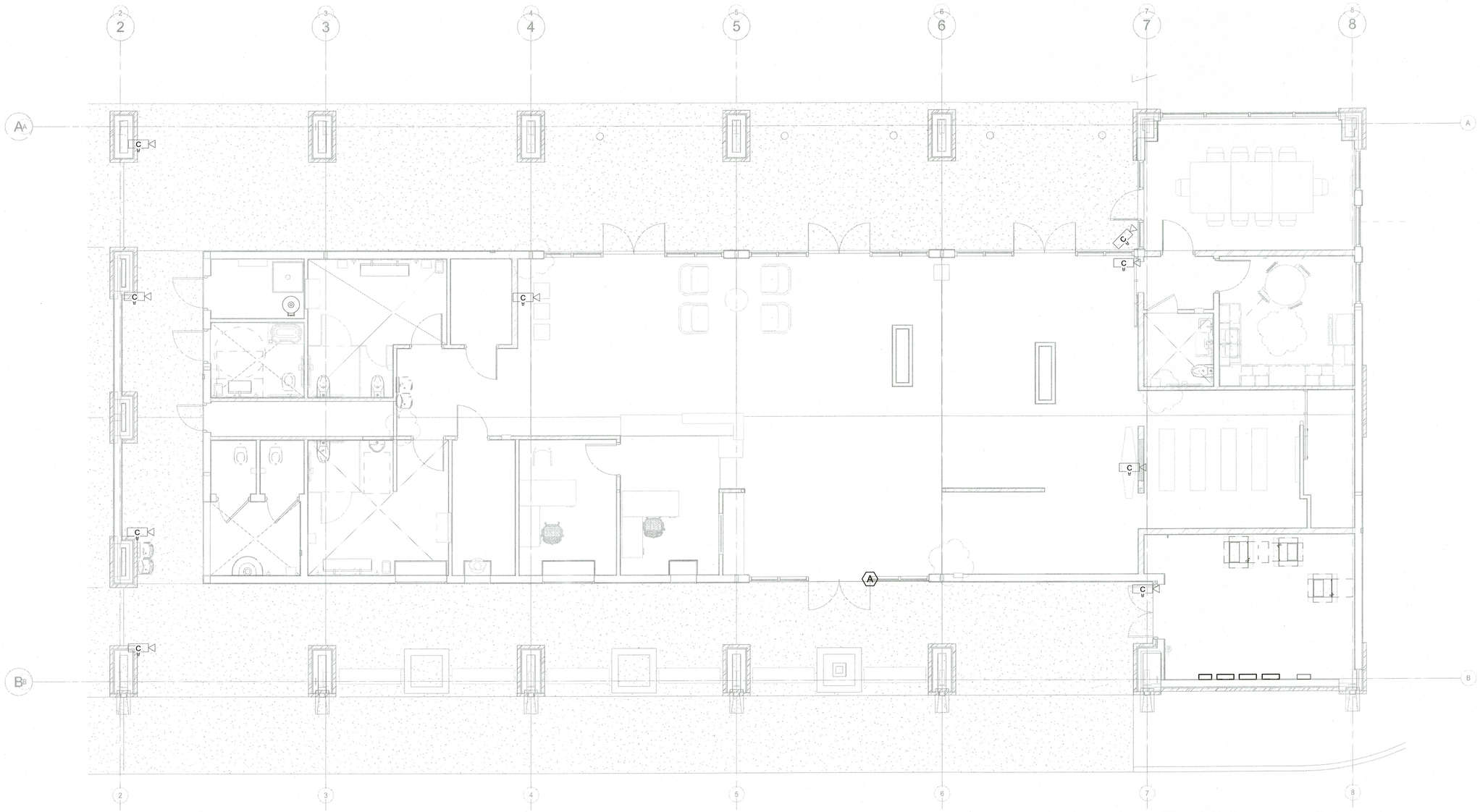
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GENERAL NOTES
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL DETAILED FIRE ALARM DESIGN REQUIRED BY ALABAMA LAW.
2. THE CONTRACTOR SHALL PROVIDE SIGNED AND SEALED FIRE ALARM INSTALLATION DRAWING BY AN ALABAMA P.E. (THE ALABAMA P.E. WILL ACT AS A DELEGATE ENGINEER FOR THE DESIGN OF THE FIRE ALARM SYSTEM).
3. FIRE ALARM CONTRACTOR SHALL PROVIDE AND INSTALL A FULLY OPERATIONAL FIRE PROTECTION SYSTEM. /
4. ALL WORK SHALL BE IN ACCORDANCE WITH ALABAMA BUILDING CODES, NFPA 13, NFPA 72, NEC AND LOCAL AUTHORITY HAVING JURSIDICTION.
5. FIRE ALARM CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING PERMITS AND MAKING PLAN REVISIONS AS DIRECTED AND REQUIRED.
6. CONTRACTOR TO PROVIDE 3/4"C FROM ALL FIRE ALARM DEVICES AND CAMERAS TO FIRE ALARM AND SECURITY CONTROL PANEL WITH CONDUCTOR AS REQUIRED.
7. SHUTDOWN OF EXHAUST FANS TO BE THROUGH START SIGNAL INTERLOCK OF AHU.
8.CAMERAS TO BE INSTALLED AND FED FROM THE IT ROOM WITH CAT5E CABLE.

KEYNOTES:

A. PROVIDE BADGE READER AT FRONT DOOR

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1	06/19/2024	Permitting Resubmit 2.

DATE: 10/27/2023
DESIGNED BY: Samantha Riley
DRAWN BY: Samantha Riley
CHECKED BY: Andrew Gibbs
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

ALABAMA LICENSED PROFESSIONAL ENGINEER ANDREW K. GIBBS No. 33984 10/06/23

SHEET TITLE

FIRE ALARM AND SECURITY PLAN

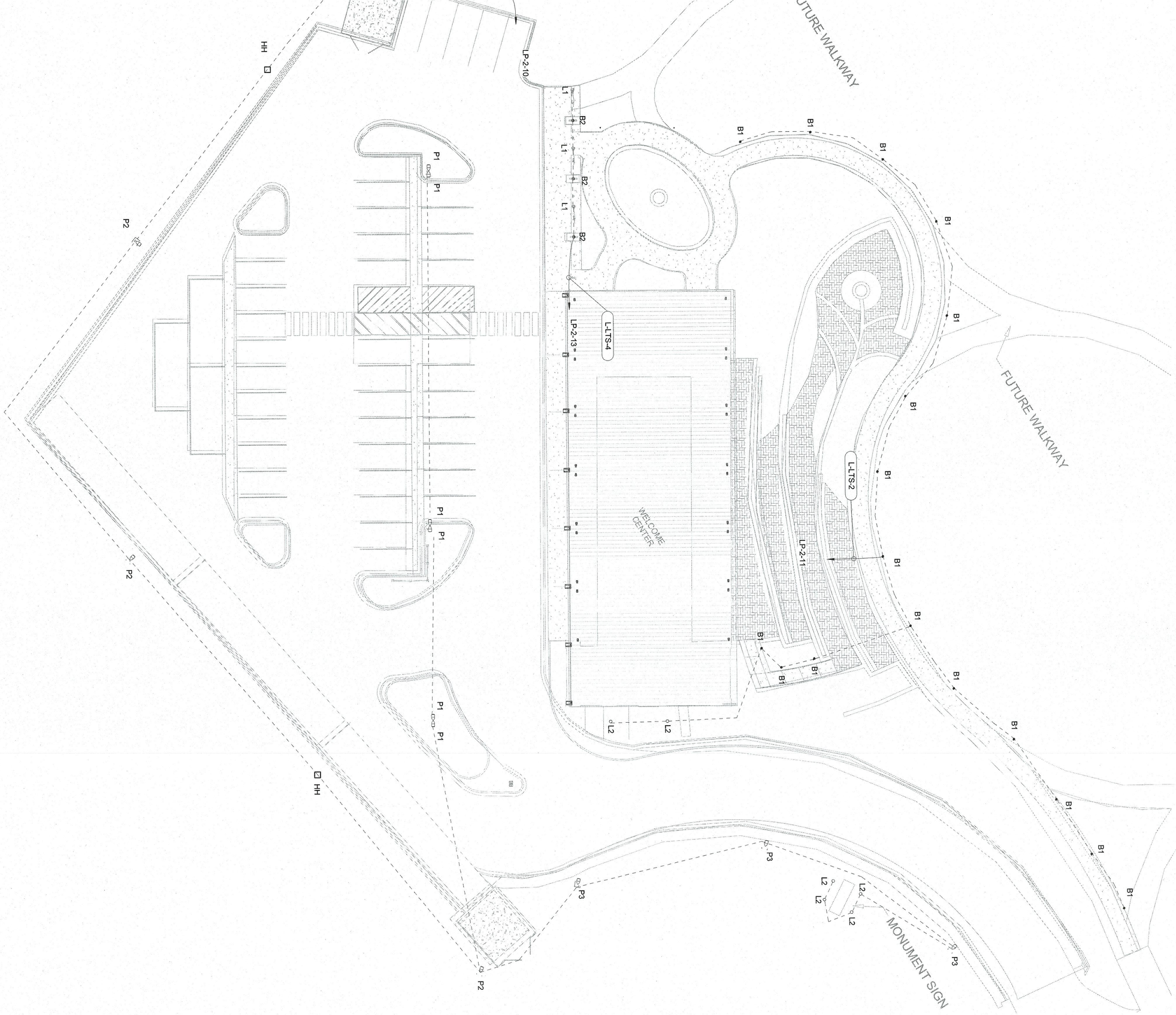
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E205

SHEET TITLE
SITE LIGHTING PLAN

ALABAMA LICENSED PROFESSIONAL ENGINEER ANDREW K. GIBBS NO. 33984

DATE:	10/27/2023
DESIGNED BY:	Samantha Riley
DRAWN BY:	Samantha Riley
CHECKED BY:	Andrew Gibbs
PROFESSION:	ARCHITECTURE
PROJECT ARCHITECT:	Andrew Marasca
M.M.A. PROJECT NUMBER:	502100720

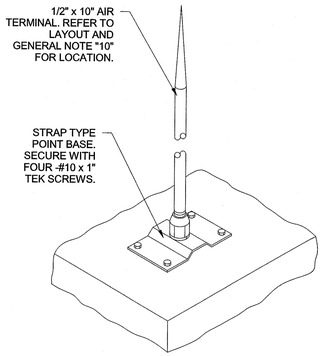
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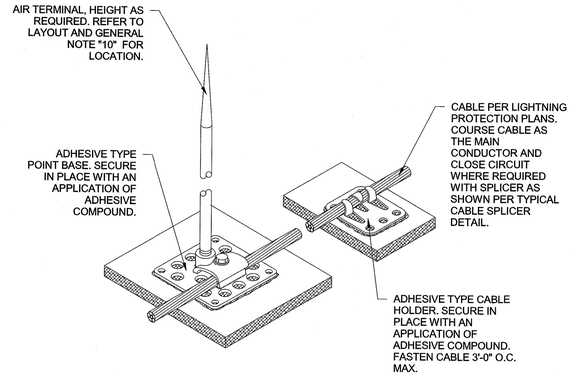
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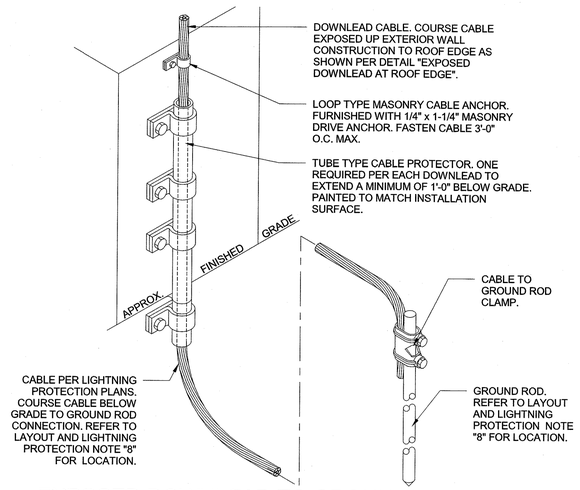
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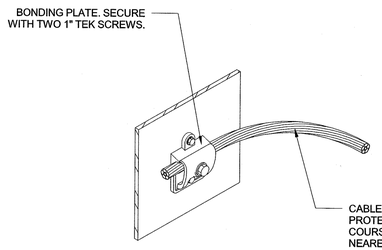
1 EQUIPMENT AIR TERMINAL
NTS



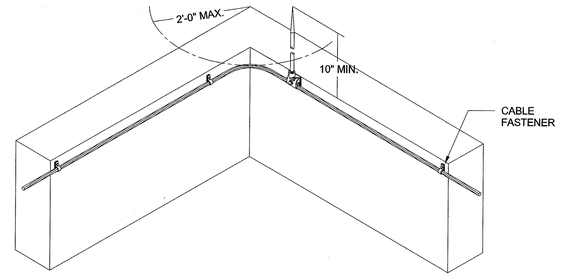
2 ADHESIVE AIR TERMINAL (PREFERRED)
NTS



3 EXPOSED DOWNLEAD TO GROUNDING CONNECTION
NTS

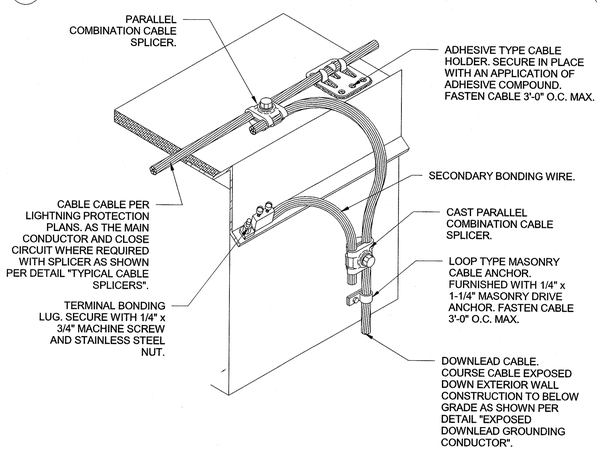


4 TYPICAL EQUIPMENT HOUSING BOND
NTS

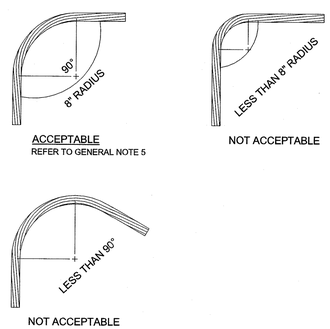


NOTE:
THIS DETAIL DEPICTS NO SPECIFIC AREA SHOWN ON THE LAYOUT. THIS DETAIL ILLUSTRATES TYPICAL AIR TERMINAL PLACEMENT FOR EITHER PARAPETS OR FLAT ROOFS.

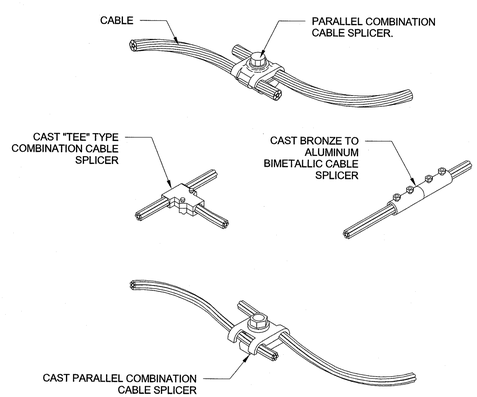
5 TYPICAL AIR TERMINAL PLACEMENT AT OUTSIDE CORNERS
NTS



6 EXPOSED DOWNLEAD AT ROOF EDGE
NTS



7 TYPICAL CABLE BEND REQUIREMENTS
NTS



8 TYPICAL CABLE SPLICERS
NTS

LIGHTNING PROTECTION NOTES

1. THE DESIGN LAYOUT AND INSTALLATION DETAILS SHOWN HERON SHALL MEET THE REQUIREMENTS OF UNDERWRITERS' LABORATORIES STANDARD 96A FOR MASTER LABELED LIGHTNING PROTECTION SYSTEMS. THE ACTUAL MASTER LABEL WILL BE DELIVERED UPON COMPLETION OF INSTALLATION.
2. THE LIGHTNING PROTECTION INSTALLATION SHALL COMPLY IN ALL RESPECTS TO LIGHTNING PROTECTION INSTITUTE STANDARD 175. THE INSTALLATION SHALL BE MADE BY OR UNDER THE SUPERVISION OF AN L.P.I. CERTIFIED MASTER INSTALLER. THE COMPLETED INSTALLATION WILL RECEIVE SYSTEM CERTIFICATION SUBMITTAL FOR LPI 176.
3. LIGHTNING PROTECTION SYSTEM SHALL BE DESIGNED BY A MEMBER OF THE LIGHTNING PROTECTION INSTITUTE. SYSTEM DESIGN SHALL BE SUBMITTED FOR REVIEW & APPROVAL. DESIGN SHALL MEET THE REQUIREMENTS OF NFPA 780, CURRENT EDITION.
4. METAL BODIES OF INDUCTANCE LOCATED ABOUT THE ROOF SUCH AS; METAL FLASHING GRAVEL STOPS, ROOF DRAINS, SOIL PIPE VENTS, INSULATION VENTS, LOUVERS AND DOOR FRAMES SITUATED WITHIN 6'-0" OF A LIGHTING CONDUCTOR OR BONDED METAL BODY SHALL BE INTERCONNECTED TO THE LIGHTING CONDUCTOR SYSTEM.
5. NO BEND OF A CONDUCTOR SHALL FORM A FINAL INCLUDED ANGLE OF LESS THAN 90° NOR SHALL HAVE A RADIUS OF BEND LESS THAN 8".
6. CONDUCTORS SHALL INTERCONNECT ALL AIR TERMINALS AND SHALL FOR A TWO WAY PATH FROM EACH AIR TERMINAL HORIZONTALLY OR DOWNWARD TO CONNECTIONS WITH GROUND TERMINALS.
7. ALL LIGHTNING PROTECTION CONDUCTORS SHALL BE FASTENED NOT MORE THAN 3'-0" MAXIMUM SPACING.
8. CONNECTIONS TO GROUND ROD OR GROUND LOOP CONDUCTOR SHALL BE MADE AT A POINT NOT LESS THAN 1'-0" BELOW GRADE AND 2'-0" AWAY FROM FOUNDATION WALL.
9. ACTUAL JOB-SITE CONDITIONS MAY NECESSITATE SLIGHT ALTERATIONS IN AIR TERMINAL AND GROUND ROD LOCATIONS.
10. AIR TERMINALS SHALL BE PLACED AT ALL UNPROTECTED OUTSIDE CORNERS AND LOCATED INTERMEDIATELY ON 20'-0" MAXIMUM SPACING AROUND THE ROOF PERIMETER OR RIDGE AND WITHIN 2'-0" OF OUTSIDE EDGE.
11. MIDROOF AIR TERMINALS SHALL BE PLACED ON 50'-0" MAXIMUM SPACING.
12. BOND ALL METALLIC PIPES INCLUDING WATER, FIRE, GAS, SEWER, STORM, ETC. WHICH ENTER THE STRUCTURE TO THE NEAREST DOWNLEAD, GROUND ROD OR GROUND LOOP.
13. BARE COPPER LIGHTNING PROTECTION MATERIALS SHALL NOT BE INSTALLED ON ALUMINUM ROOF OR SIDING OR OTHER ALUMINUM SURFACES AND VICE VERSA. ALUMINUM LIGHTNING PROTECTION MATERIALS SHALL NOT BE INSTALLED ON COPPER ROOFING OR COPPER SIDING OR OTHER COPPER SURFACES.
14. FOR SAKE OF CLARITY, WE HAVE NOT LABELED EACH INDIVIDUAL ITEM OF LIGHTNING PROTECTION MATERIALS ON THE ROOF PLAN. WE HAVE SHOWN INSTALLATION DETAILS AND HAVE CALLED OUT EACH OF THESE DETAILS ON THE ROOF PLAN ONLY AT RANDOM LOCATIONS.
15. THE LIGHTNING PROTECTION SYSTEM SHALL BE INSTALLED IN A NEAT AND INCONSPICUOUS MANNER SO THAT ALL COMPONENTS WILL BLEND IN WITH THE APPEARANCE OF THE BUILDING.
16. SEAL ENDS OF CONDUIT MOISTURE TIGHT WITH DUCT SEAL OR LEAD WEDGE.
17. ALL CONDUIT, CONDUIT FASTENERS AND MISCELLANEOUS STEEL SHALL BE MADE ELECTRICALLY CONTINUOUS THROUGHOUT CONSTRUCTION BY WELDING, CLIPPING, BOLTING OR OTHER APPROVED METHODS.
18. ALL REINFORCING, STRUCTURAL, FRAMING AND MISCELLANEOUS STEEL SHALL BE MADE ELECTRICALLY CONTINUOUS THROUGHOUT CONSTRUCTION BY WELDING, CLIPPING, BOLTING OR OTHER APPROVED METHODS.
19. TELEPHONE AND/OR ELECTRICAL SERVICE ENTRANCE GROUNDS SHALL BE INTERCONNECTED TO ONE LIGHTNING PROTECTION GROUND OR WATER PIPE.
20. ALL AREAS ILLUSTRATED IN THESE SUBMITTAL DOCUMENTS WHICH HAVE NOT BEEN PROVIDED WITH LIGHTNING PROTECTION COMPONENTS ARE PROTECTED FROM HIGHER ROOFS OR STRUCTURES. THESE AREAS FALL WITHIN A "ZONE OF PROTECTION" AS ESTABLISHED BY THE CURRENT EDITION OF THE CODE FOR PROTECTION AGAINST LIGHTNING "ANSI/NFPA" AND THE INSTALLATION REQUIREMENTS FOR LIGHTNING PROTECTION SYSTEMS AS PROVIDED BY STANDARD 96A OF UNDERWRITERS' LABORATORIES.
21. ALL ADHESIVE TYPE FITTINGS SHALL BE SET IN PLACE WITH AN APPLICATION OF COMPATIBLE ROOF CEMENT OR A/C NO. P899LN ADHESIVE COMPOUND BEFORE ROOF GRAVEL IS APPLIED.
22. ARRESTERS ARE REQUIRED ON ELECTRICAL SERVICE PANEL, DATA AND TELEPHONE LINE ENTRANCES BY THE ELECTRICAL CONTRACTOR OR BY VARIOUS UTILITY AGENCIES.

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REV	DATE	REVISIONS DESCRIPTION
A	07/17/2023	30% Submission
B	10/02/2023	90% Submission
C	10/27/2023	100% Submission

DATE: 10/27/2023
DESIGNED BY: Samantha Riley
DRAWN BY: Samantha Riley
CHECKED BY: Andrew Gibbs
PROFESSION: ENGINEER
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720



SHEET TITLE
ELECTRICAL DETAILS 1

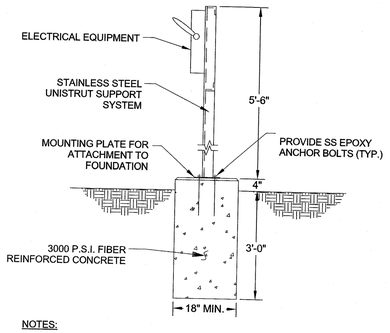
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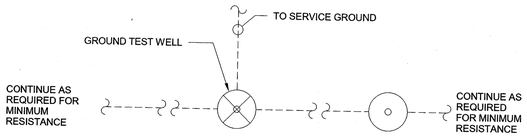
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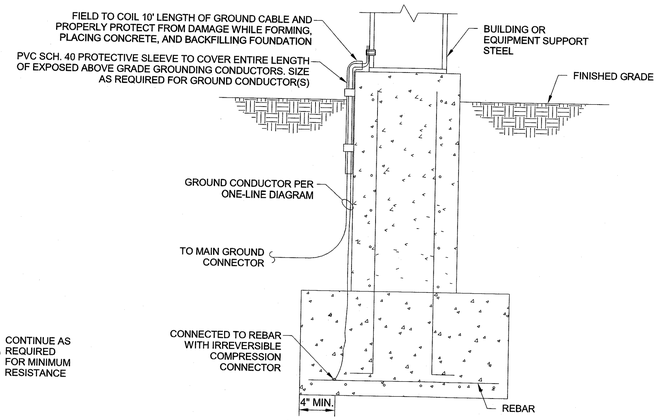


NOTES:
1. EQUIPMENT MOUNTING RACKS SHALL BE DESIGNED BY UNISTRUT TO WITHSTAND WIND LOAD PER STRUCTURAL PLANS WITH THE PROPOSED EQUIPMENT.

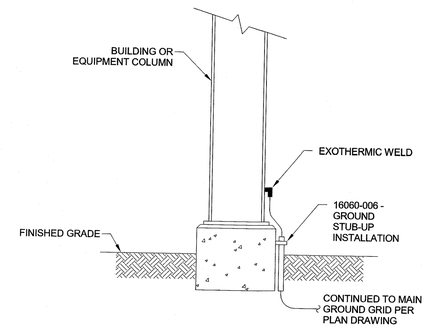
1 ELECTRICAL EQUIPMENT MOUNTING DETAIL
NTS



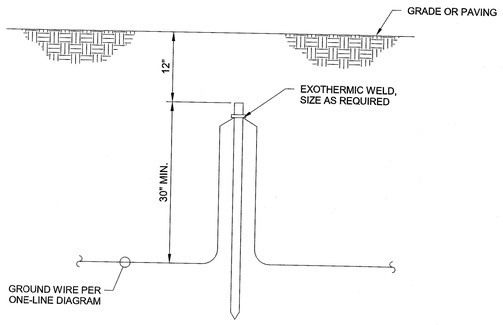
2 GROUND LOOP INSTALLATION
NTS



3 FOUNDATION GROUNDING
NTS

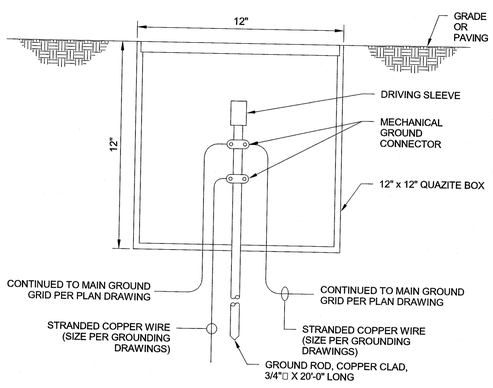


4 THERMAL GROUND FOR STRUCTURE OR BUILDING
NTS

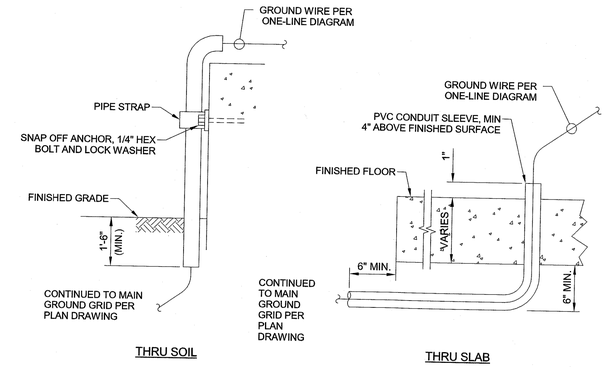


NOTE:
REFER TO SPECIFICATIONS FOR MINIMUM SYSTEM RESISTANCE TO GROUND. IF THIS RESISTANCE CANNOT BE MET WITH SINGLE 20' RODS, ADD ADDITIONAL SECTIONS TO RODS OR ADD NEW RODS AS REQUIRED SPACED WITH A DISTANCE EQUAL TO LENGTH OF GROUND ROD.

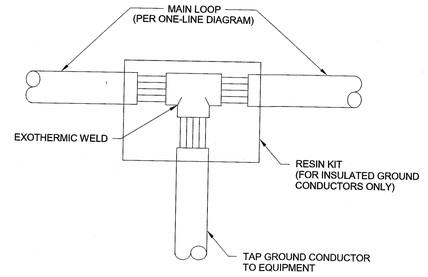
5 GROUND ROD ASSEMBLY
NTS



6 GROUND TEST WELL
NTS

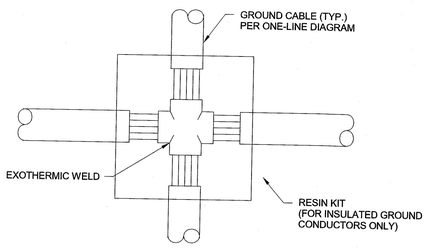


7 GROUND STUB UP INSTALLATION
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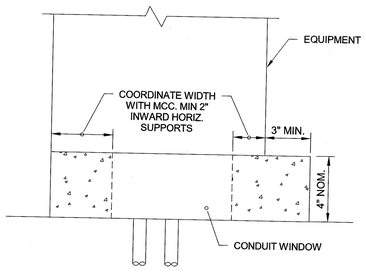
NOTE:
WHEN INSULATION IS REQUIRED PER THE ONE-LINE DIAGRAM, IT IS TO BE STRIPPED BACK ENOUGH FOR EXOTHERMIC WELD BUT NOT PAST RESIN MOLD.

8 GROUND LOOP & EQUIPMENT TAP - CADWELD
NTS



NOTE:
WHEN INSULATION IS REQUIRED PER THE ONE-LINE DIAGRAM, IT IS TO BE STRIPPED BACK ENOUGH FOR EXOTHERMIC WELD BUT NOT PAST RESIN MOLD.

9 MAIN GROUNDING LOOP 4 WAY TAP
NTS



10 FLOOR MOUNTED CONCRETE BASE
NTS

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100% Submission	C	10/27/2023

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DESIGNED BY: Samantha Riley
DRAWN BY: Samantha Riley
CHECKED BY: Andrew Gibbs
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PROJECT ARCHITECT: Andrew Manasca
M.M.A. PROJECT NUMBER: 502100720

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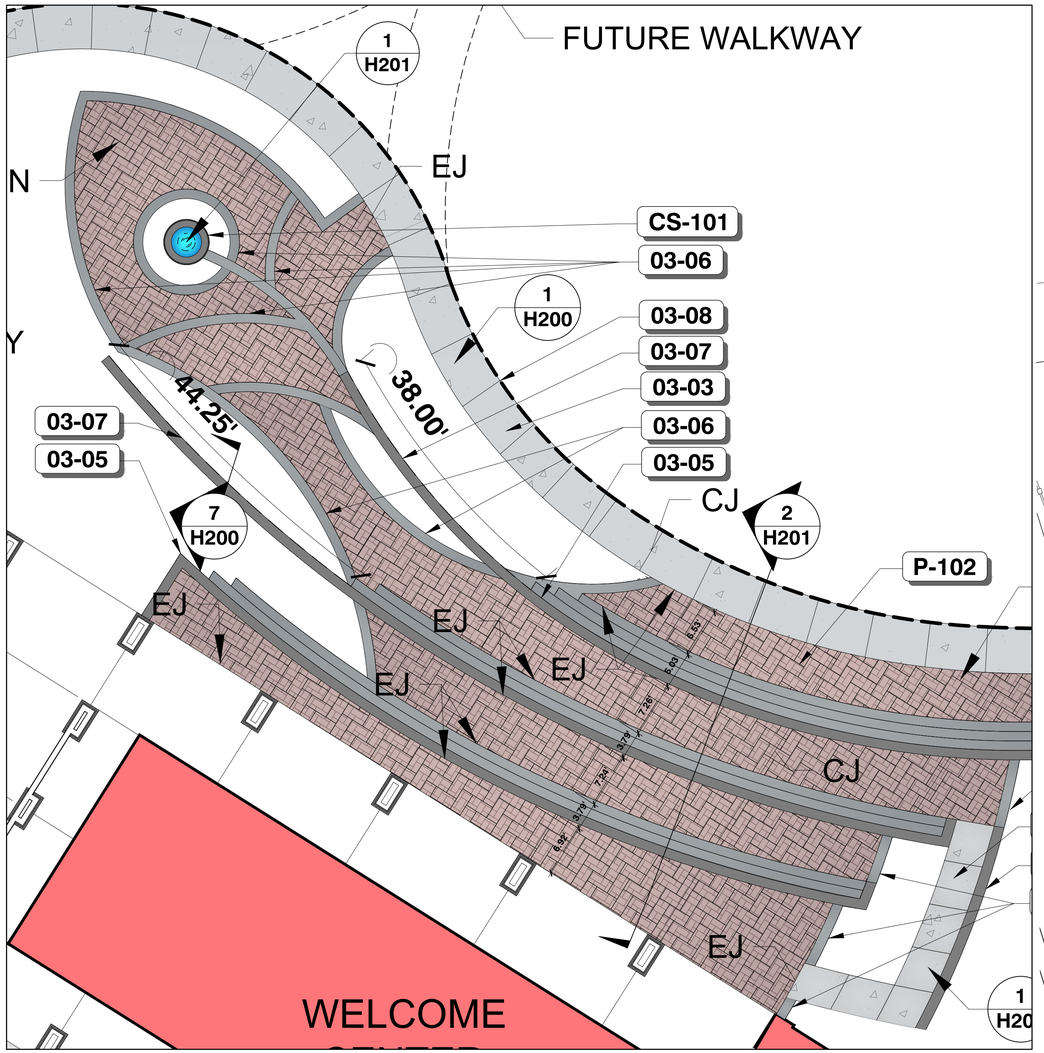
SHEET TITLE
ELECTRICAL DETAILS 2

SHEET NUMBER
E302

100% SUBMITTAL

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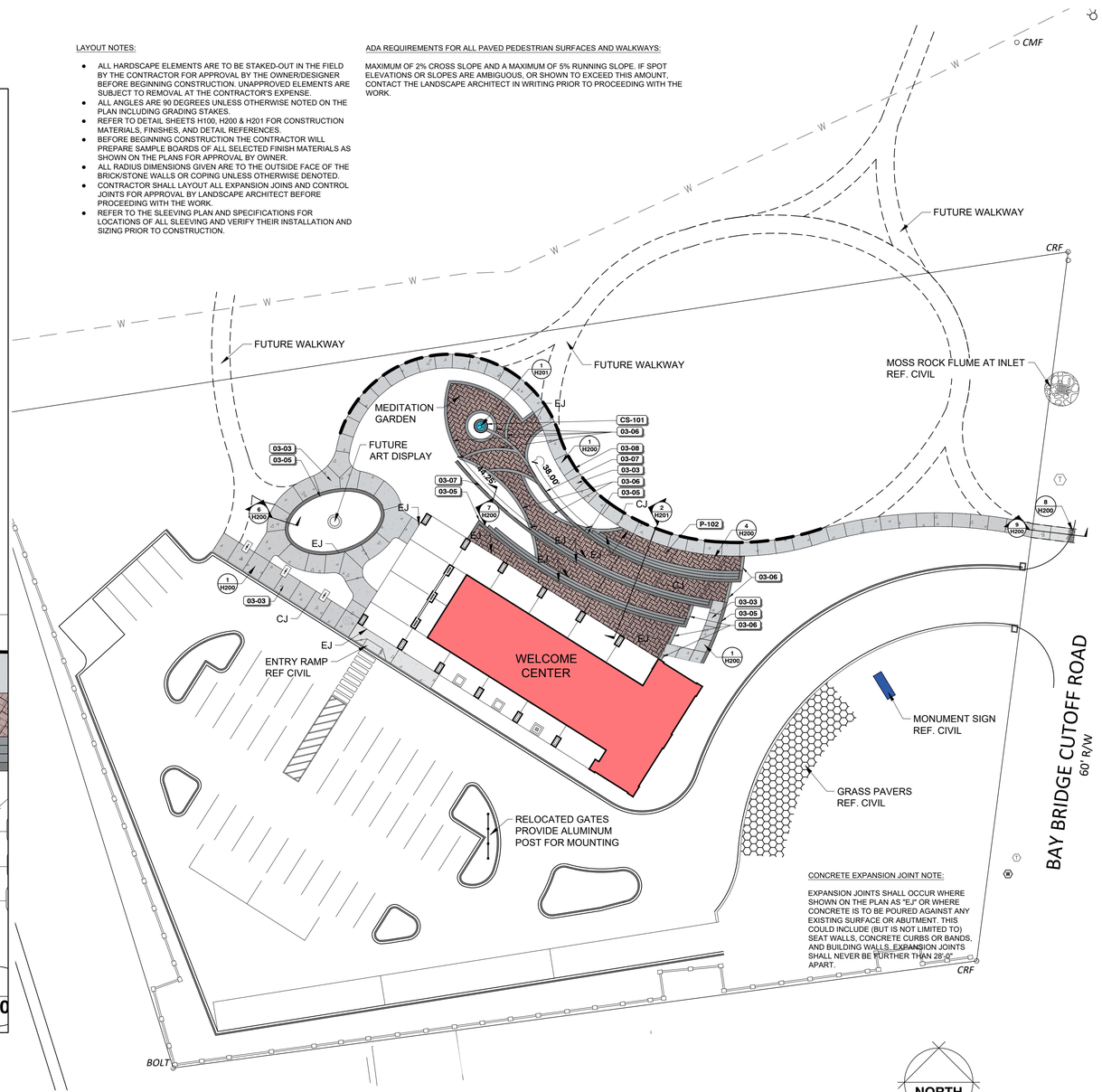
01 NORTH TERRACE ENLARGEMENT
1" = 10'-0"

LAYOUT NOTES:

- ALL HARDSCAPE ELEMENTS ARE TO BE STAKED-OUT IN THE FIELD BY THE CONTRACTOR FOR APPROVAL BY THE OWNER/DESIGNER BEFORE BEGINNING CONSTRUCTION. UNAPPROVED ELEMENTS ARE SUBJECT TO REMOVAL AT THE CONTRACTOR'S EXPENSE.
- ALL ANGLES ARE 90 DEGREES UNLESS OTHERWISE NOTED ON THE PLAN INCLUDING GRADING STAKES.
- REFER TO DETAIL SHEETS H100, H200 & H201 FOR CONSTRUCTION MATERIALS, FINISHES, AND DETAIL REFERENCES.
- BEFORE BEGINNING CONSTRUCTION THE CONTRACTOR WILL PREPARE SAMPLE BOARDS OF ALL SELECTED FINISH MATERIALS AS SHOWN ON THE PLANS FOR APPROVAL BY OWNER.
- ALL RADIUS DIMENSIONS GIVEN ARE TO THE OUTSIDE FACE OF THE BRICK/STONE WALLS OR COPING UNLESS OTHERWISE DENOTED.
- CONTRACTOR SHALL LAYOUT ALL EXPANSION JOINS AND CONTROL JOINTS FOR APPROVAL BY LANDSCAPE ARCHITECT BEFORE PROCEEDING WITH THE WORK.
- REFER TO THE SLEEVING PLAN AND SPECIFICATIONS FOR LOCATIONS OF ALL SLEEVING AND VERIFY THEIR INSTALLATION AND SIZING PRIOR TO CONSTRUCTION.

ADA REQUIREMENTS FOR ALL PAVED PEDESTRIAN SURFACES AND WALKWAYS:

MAXIMUM OF 2% CROSS SLOPE AND A MAXIMUM OF 5% RUNNING SLOPE. IF SPOT ELEVATIONS OR SLOPES ARE AMBIGUOUS, OR SHOWN TO EXCEED THIS AMOUNT, CONTACT THE LANDSCAPE ARCHITECT IN WRITING PRIOR TO PROCEEDING WITH THE WORK.



HARDSCAPE SCHEDULE

	CONCRETE														
SYMBOL	DESCRIPTION	QTY	DETAIL	CONCRETE THICKNESS	MATERIAL MIX	FINISH	REINFORCEMENT	CONTROL JOINT	EXPANSION JOINT	ADDITIVES					
03-03	CONCRETE SIDEWALKS	5 287 SF	1/H200	PER DETAIL	PER DETAIL	LIGHT BROOM	6X6 WWM	10`-0" O.C.	20`-0" O.C.	N/A					
03-04	CAST-IN PLACE CONCRETE STEPS	560 LF	2/H201	PER DETAIL	PER DETAIL	LIGHT BROOM	PER DETAIL	PER DETAIL	PER DETAIL						
03-05	CAST-IN PLACE CONCRETE RETAINING WALL	423 LF	6/H200	PER DETAIL	PER DETAIL	PER DETAIL	PER DETAIL	PER DETAIL	PER DETAIL	ADI-CON CW PLUS					
03-06	CONCRETE BANDING	362 LF	4/H200	PER DETAIL	3500 PSI	LIGHT BROOM	PER DETAIL	PER DETAIL	PER DETAIL						
03-07	CAST-IN PLACE CONCRETE DOUBLE SIDED RETAINING WALL	82 LF	7/H200	PER DETAIL	3500 PSI	PER DETAIL	PER DETAIL	PER DETAIL	PER DETAIL						
03-08	24" TURN DOWN ALONG WALKWAY	261 LF	10/H200	PER DETAIL	3500 PSI	PER DETAIL	PER DETAIL	PER DETAIL	PER DETAIL						
	CAST STONE														
SYMBOL	DESCRIPTION	QTY	DETAIL	MFG	PRODUCT CODE	MATERIAL	DIMENSIONS	WEIGHT	FINISH	POWER REQ.					
CS-101	PRE-CAST FOUNTAIN	1	1/H201	CAMPANIA INTERNATIONAL	GFRCFT-1102	CONCRETE	72" W X 26.25" H	627 LBS.	T.B.D.	110V GFCI BREAKER PER CODE					
	ROCK														
SYMBOL	DESCRIPTION	QTY	DETAIL	MATERIAL	SIZE	DEPTH	FABRIC TYPE	STAPLES							
K-101	MOSS COVERED RIVER ROCK (SMOOTH)	161 SF		SMOOTH RIVER ROCK	6" - 12"	12"	4OZ. NON-WOVEN	24" O.C.							
	PAVERS														
SYMBOL	DESCRIPTION	QTY	DETAIL	BASE MATERIAL	PAVER MFG.	PAVER TYPE	PAVER SIZE	PAVER COLOR	PATTERN	JOINT TYPE	JOINT SIZE	JOINT IN-FILL TYPE	JOINT IN-FILL COLOR	SEALER	
P-102	BRICK PAVER	10 215 SF	4/H200	CONCRETE	PINEHALL BRICK	ENGLISH EDGE	4" X 8" X 2.25"	FULL RANGE	45D HERRINGBONE	BUTT JOINT	PER MFG.	SEK POLYMERIC SAND	PLATINUM	SEK SB-5000	

NOTE: QUANTITIES SHOWN IN THE "HARDSCAPE SCHEDULE" ARE SOLELY FOR THE CONVENIENCE OF THE LANDSCAPE CONTRACTOR. CONTRACTOR TO VERIFY QUANTITIES SHOWN ON THE "HARDSCAPE PLAN" AGAINST THOSE SHOWN IN THE "HARDSCAPESCHEDULE", AND PLANT THOSE QUANTITIES SHOWN ON THE "HARDSCAPE PLAN".

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100% Submission	C	10/27/2023

DATE:	10/02/2023
DESIGNED BY:	CHP
DRAWN BY:	MRP
CHECKED BY:	CHP
PROFESSION:	ARCHITECTURE
PROJECT ARCHITECT:	Andrew Marascia
M.M.A. PROJECT NUMBER:	502100720

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STATE OF ALABAMA
REGISTERED LANDSCAPE ARCHITECT
CHRISTIAN PREUS
9.27.23

SHEET TITLE
HARDSCAPE PLAN

SHEET NUMBER
H100

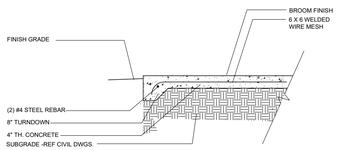
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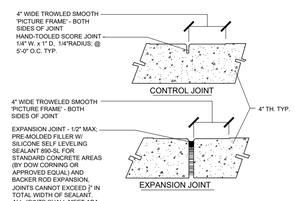
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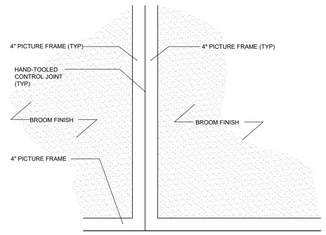
1 4" CONCRETE SECTION W/ TURNDOWN

NOT TO SCALE P-CP-CP-13



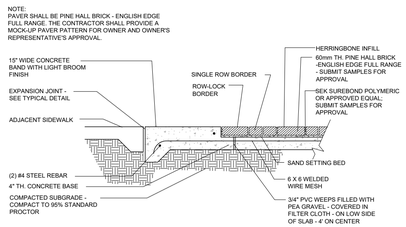
2 TYPICAL SIDEWALK CONCRETE JOINTS

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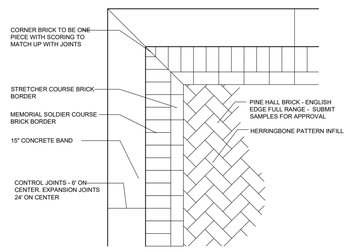
3 TYPICAL CONCRETE FINISH DETAIL - BROOM FINISH

NOT TO SCALE P-CP-CP-04



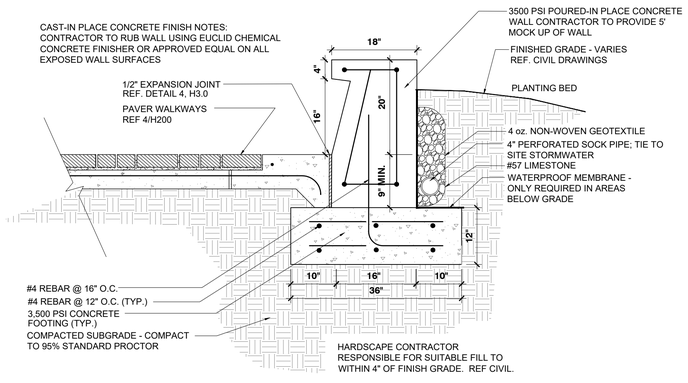
4 BRICK PAVER W/ 15" CONCRETE BAND DETAIL

NOT TO SCALE P-CP-PAV-12



5 BRICK PAVER W/ 15" CONCRETE BAND DETAIL

NOT TO SCALE P-CP-PAV-03



6 CAST-IN PLACE SEAT WALL DETAIL

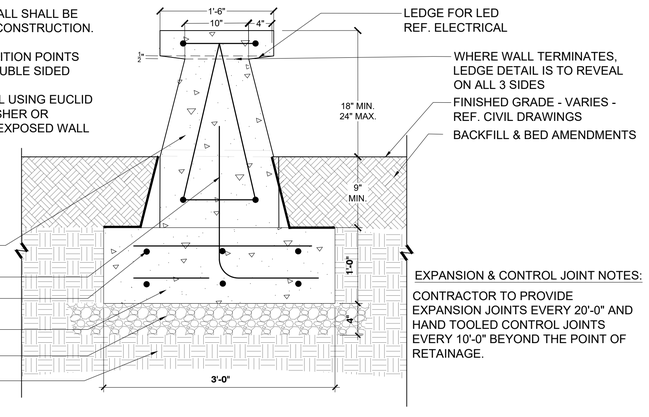
NOT TO SCALE P-CP-WAL-07

SEAT WALL NOTES:

A 10'-0" SECTION OF THE WALL SHALL BE BUILT PRIOR TO FURTHER CONSTRUCTION.

REF H100 FOR WALL TRANSITION POINTS FROM SINGLE SIDED TO DOUBLE SIDED

CONTRACTOR TO RUB WALL USING EUCLID CHEMICAL CONCRETE FINISHER OR APPROVED EQUAL ON ALL EXPOSED WALL SURFACES.

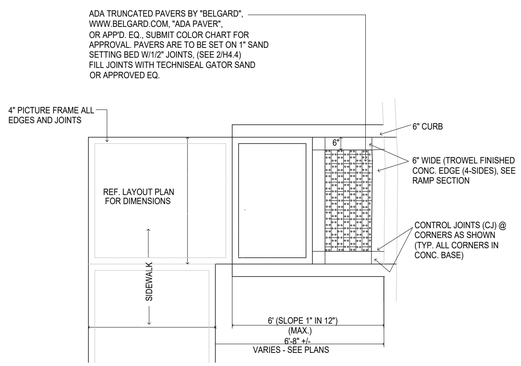


EXPANSION & CONTROL JOINT NOTES:

CONTRACTOR TO PROVIDE EXPANSION JOINTS EVERY 20'-0" AND HAND TOOLED CONTROL JOINTS EVERY 10'-0" BEYOND THE POINT OF RETAINAGE.

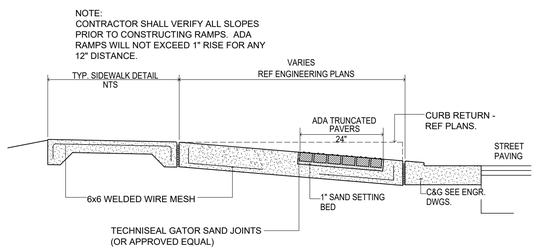
7 CAST-IN PLACE DOUBLE-SIDED SEAT WALL BEYOND RETAINAGE

NOT TO SCALE P-CP-WAL-08



8 WALK & RAMP PLAN W/ TRUNCATED DOME PAVERS

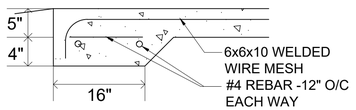
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9 WALK & RAMP SECTION W/ TRUNCATED DOME PAVERS

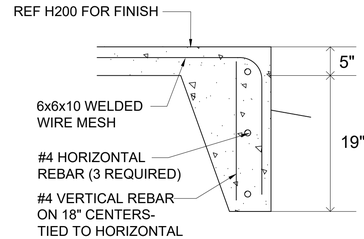
NOT TO SCALE P-CP-ADA-02

NOTE: REF. H100 FOR LOCATIONS ON SITE WHERE THIS CONDITION OCCURS



TURN DOWN DETAIL FOR EMBEDDED GAURDRAIL

REF. PLANS FOR LOCATIONS



24" TURNDOWN SECTION

REF. PLANS FOR LOCATIONS

10 TYPICAL SECTION OF CONCRETE WALKWAYS REQUIRING TURN DOWN

NOT TO SCALE P-CP-CP-14

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Engineers
Surveyors

MOTT MACDONALD

AFRICATOWN WELCOME CENTER
City of Mobile
1959 Bay Bridge Road Cutoff
Mobile, AL. 36610

REVISIONS DESCRIPTION

REV	DATE	DESCRIPTION
A	07/17/2023	30% Submission
B	10/02/2023	90% Submission
C	10/27/2023	100% Submission

DATE:	10/02/2023	
DESIGNED BY:	CHP	
DRAWN BY:	MRP	
CHECKED BY:	CHP	
PROFESSION:		ARCHITECTURE
PROJECT ARCHITECT:		Andrew Marasca
M.M.A. PROJECT NUMBER:		502100720

STATE OF ALABAMA
REGISTERED LANDSCAPE ARCHITECT
CHRISTIAN PREUS
10-27-23

SHEET TITLE

HARDSCAPE DETAILS

SHEET NUMBER

H200

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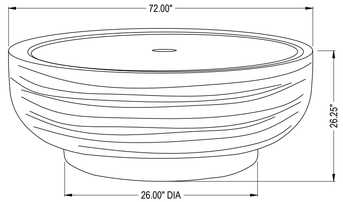
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☑ SELECT DESIRED COLOR:

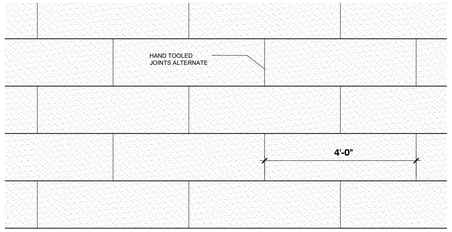
- ☐ AGED LIMESTONE (AL)
- ☑ ALPINE STONE (AS)
- ☐ BROWNSTONE (BR)
- ☐ COPPER BRONZE (CB)
- ☐ ENGLISH MOSS (EM)
- ☐ FERRO RUSTICO NUOVO (FN)
- ☐ NATURAL (NA)
- ☐ NERO NUOVO (NN)
- ☐ PIETRA NUOVA (PN)
- ☐ TRAVERTINE (TR)
- ☐ VERDE (VE)
- ☐ GREYSTONE (GS)

☑ SELECT DESIRED FOUNTAIN SIZE:



☑ GIRONA FOUNTAIN (GFRCFT-1102)
627 LBS

NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DO NOT SCALE DRAWING.
3. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
4. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
5. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT www.CADdetails.com/info AND ENTER REFERENCE NUMBER

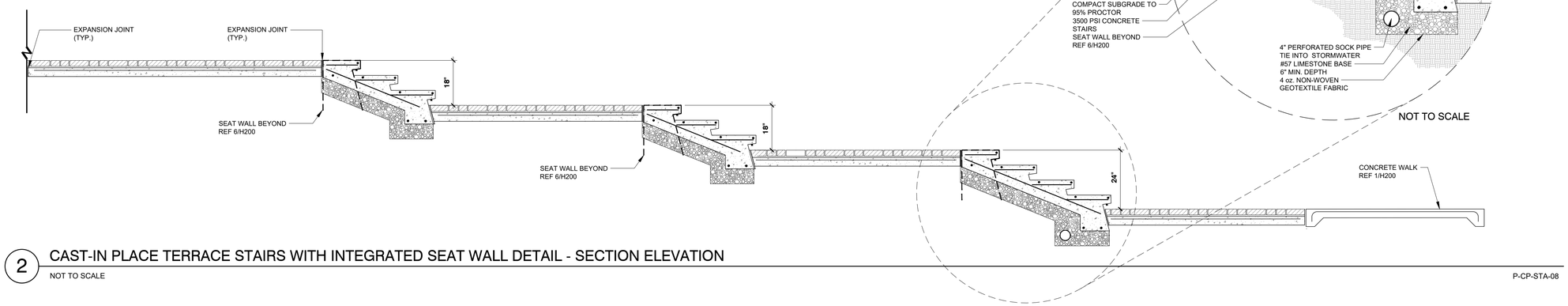


1 METROPOLITAN COLLECTION

METROPOLITAN COLLECTION: GIRONA FOUNTAIN — P-CP-PRE-01

3 TYPICAL JOINT LAYOUT IN STEP (PLAN VIEW)

NOT TO SCALE — P-CP-PAV-05



2 CAST-IN PLACE TERRACE STAIRS WITH INTEGRATED SEAT WALL DETAIL - SECTION ELEVATION

NOT TO SCALE — P-CP-STA-08

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CHECKED BY: CHP
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Maraseca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
CHRISTIAN PART
10-27-23
800
REGISTERED LANDSCAPE ARCHITECT

SHEET TITLE

HARDSCAPE DETAILS

SHEET NUMBER

H201

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PLANT SCHEDULE

TREES	BOTANICAL / COMMON NAME	CONT	CAL	SIZE	TRUNK TYPE	
5	CRATAEGUS OPACA / WASHINGTON HAWTHORN	BALL & BURLAP	2.5" CAL	12`-14` H X 8`-9` W	SINGLE TRUCK	
5	LIRIODENDRON TULIPIFERA `EMERALD CITY` TM / EMERALD CITY TULIP TREE	BALL & BURLAP	2.5" CAL	12`-14` H X 8`-9` W	SINGLE TRUNK	
4	MAGNOLIA VIRGINIANA / SWEET BAY MAGNOLIA	#65	1.5"	12`-14` H X 8`-9` W	M.T. 3-5 SHOOTS, 4` MIN CLEAR TRUNK	
4	MUSA BASJOO / BANANA TREE	#30		10`-12` H X 6`-8` W	TREE FORM	
1	QUERCUS NUTTALLII / NUTTALL OAK	BALL & BURLAP	3" CAL	14` - 16` HEIGHT	6` CLEAR TRUNK	
1	SASSAFRAS ALBIDUM / SASSAFRAS	#15	1.5" CAL	5`-6` H X 3`-4` W	SINGLE TRUCK	
7	ULMUS AMERICANA `PRINCETON` / PRINCETON ELM	BALL & BURLAP	3.5"CAL	14`-16` H X 9`-10` W		

SHRUBS	BOTANICAL / COMMON NAME	CONT	MAINTENANCE	SIZE	SPACING TYPE	SPACING
53	ELAEOCARPUS DECIPIENS / JAPANESE BLUEBERRY SHRUB	#15	CONTINUOUS HEDGE / MASSING	5` HEIGHT	RECTANGULAR SPACING	36" o.c.
5	OSMANTHUS X FORTUNEI / SWEET OLIVE	BALL & BURLAP	MULTI-TRUNK, TREE FORM	5` - 6` HEIGHT	TREE FORM	120" o.c.

SHRUB AREAS	BOTANICAL / COMMON NAME	CONT	MAINTENANCE	SIZE	SPACING TYPE	SPACING
77	AGAPANTHUS X `BLUE GLOBE` / BLUE GLOBE AFRICAN LILY	#1	CONTINUOUS HEDGE / MASSING	12"-18" H X12"-18" W	TRIANGULAR SPACING	18" o.c.
16	ALOE VERA / MEDICINAL ALOE	#3	CONTINUOUS HEDGE / MASSING	12"-18" H X12"-18" W	TRIANGULAR SPACING	24" o.c.
178	BUDDLEJA X `SMNBDL` / PUGSTER BUTTERFLY BUSH	#3	CONTINUOUS HEDGE / MASSING	12"-18" H X12"-18" W	TRIANGULAR SPACING	24" o.c.
431	DIETES BICOLOR / BI-COLOR AFRICAN IRIS	#1	CONTINUOUS HEDGE / MASSING	8` HEIGHT	TRIANGULAR SPACING	18" o.c.
120	DISTYLIUM X `VINTAGE JADE` / VINTAGE JADE DISTYLIUM	#3	CONTINUOUS HEDGE / MASSING	24"-32" H X 24"32" W	TRIANGULAR SPACING	36" o.c.
167	GARDENIA JASMINOIDES `FROSTPROOF` / FROSTPROOF GARDENIA	#3	CONTINUOUS HEDGE / MASSING	24"-32" H X 24"32" W	TRIANGULAR SPACING	36" o.c.
29	HYDRANGEA PANICULATA `LITTLE LIME` / LITTLE LIME PANICLE HYDRANGEA	#7	CONTINUOUS HEDGE / MASSING	24"-32" H X 24"32" W	TRIANGULAR SPACING	36" o.c.
130	JUNIPERUS DAVURICA `PARSONII` / PARSON`S JUNIPER	#3	CONTINUOUS HEDGE / MASSING	12"-18" H X12"-18" W	TRIANGULAR SPACING	36" o.c.
166	MISCANTHUS SINENSIS `GRACILLIMUS` / MAIDEN GRASS	#3	CONTINUOUS HEDGE / MASSING	24"-32" H X 24"32" W	TRIANGULAR SPACING	36" o.c.
47	MYRICA CERIFERA `DON'S DWARF` / DON'S DWARF WAX MYRTLE	#3	CONTINUOUS HEDGE / MASSING	24"-32" H X 24"32" W	TRIANGULAR SPACING	32" o.c.
115	ROSA X `MEIDRIFORA` / CORAL DRIFT® ROSE	#3	CONTINUOUS HEDGE / MASSING	24"-32" H X 24"32" W	TRIANGULAR SPACING	36" o.c.

EVERGREEN GROUND COVER	BOTANICAL / COMMON NAME	CONT	MAINTENANCE	SIZE	SPACING TYPE	SPACING
209	LIRIOPE MUSCARI `EMERALD GODDESS` / EMERALD GODDESS LIRIOPE	#1	CONTINUOUS HEDGE / MASSING	6" -12" H X 6"-12" W	TRIANGULAR SPACING	16" o.c.

SODDING	BOTANICAL / COMMON NAME	CONT	MAINTENANCE	SIZE	SPACING TYPE	SPACING
57 032 SF	EREMOCHLOA OPHIUROIDES / CENTIPEDE SOD	SOLID SOD				

NOTE: QUANTITIES SHOWN IN THE "PLANT SCHEDULE" ARE SOLELY FOR THE CONVENIENCE OF THE LANDSCAPE CONTRACTOR. CONTRACTOR TO VERIFY QUANTITIES SHOWN ON THE "PLANTING PLAN" AGAINST THOSE SHOWN IN THE "PLANT SCHEDULE", AND PLANT THOSE QUANTITIES SHOWN ON THE "PLANTING PLAN".

PLANTS: LANDSCAPE CONTRACTOR SHALL SUBMIT PHOTOS WITH SCALE REFERENCES OF ALL PLANTS & TREES TO THE LANDSCAPE ARCHITECT FOR APPROVAL IN WRITING PRIOR TO HAVING THEM DELIVERED TO THE SITE.

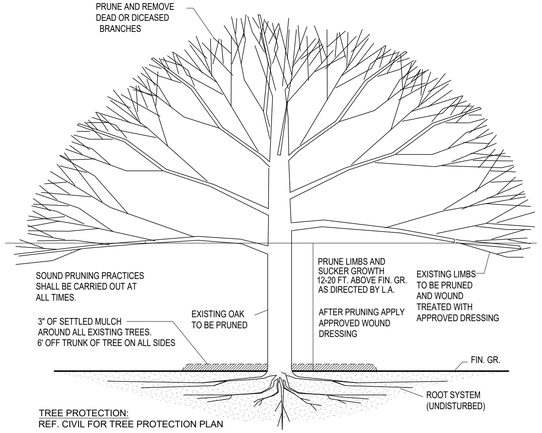
GENERAL PLANTING NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SITE INSPECTION PRIOR TO LANDSCAPE CONTRUCTION IN ORDER TO ACQUAINT HIMSELF/HERSELF WITH EXISTING CONDITIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL EXISTING UNDERGROUND UTILITIES BEFORE BEGINNING CONSTRUCTION.
2. CONTRACTOR SHALL VERIFY PLANT QUANTITIES FROM THE PLAN AND REPORT DIFFERENCES TO THE OWNER'S REPRESENTATIVE FOR ADJUSTMENTS.
3. ALL PLANT MATERIALS ARE SUBJECT TO APPROVAL OR REFUSAL BY THE OWNERS REPRESENTATIVE AT THE JOB SITE.
4. CONTRACTOR SHALL LAYOUT ALL PLANT MATERIAL FOR REVIEW BY OWNER'S REPRESENTATIVES APPROVAL PRIOR TO PLANTING. A MINIMUM 48 HOURS NOTICE SHOULD BE GIVEN AND ANTICIPATED BY THE CONTRACTOR FOR THIS REVIEW.
5. CONTRACTOR SHALL AMEND ALL PLANTING AREAS WITH 60% APPROVED ORGANIC SOIL MIX AND 40% APPROVED SANDY LOAM TOPSOIL PROPER DRAINAGE SHALL BE OBTAINED IN ALL AREAS. DO NOT BACK FILL HOLES WITH EXISTING SUBGRADE.
6. PLANTS SHALL BE WELL FORMED, VIGORUS. GROWING SPECIMENS WITH GROWTH TYPICAL OF VARIETIES SPECIFIED AND SHALL BE FREE FROM INJURY, INSECTS AND DESEASES. PLANTS SHALL EQUAL OR SURPASS QUALITY AS DEFINED IN THE CURRENT ISSUE OF NURSERY "AMERICAN STANDARDS FOR NURSERY STOCK" AS PUBLISHED BY THE AMERICAN NURSERYMEN, INC.
7. ALL PLANT MATERIAL SHALL BE CONTAINER GROWN UNLESS OTHERWISE SPECIFIED.
8. ALL PLANTING PITS SHALL BE DOUBLE THE SIZE OF THE ROOT BALL OR CONTAINER.
9. PROVIDE A WATER PERCOLATION TEST FOR ALL TREE PITS. FILL EACH TREE PIT WITH WATER, IF THE WATER DOES NOT PERCOLATE OUT WITHIN 12 HOURS, PROVIDE TREE PIT DRAINAGE. AUGER A 8" DIAMETER HOLE 36" DOWN AT THE BOTTOM OF THE TREE PIT AND FILL WITH CRUSHED STONE. TEST AGAIN FOR PROPER PERCOLATION.
10. FRONT ROW OR SHRUBS SHALL BE PLANTED A MINIMUM OF 24" BEHIND BED LINE AT LAWNS OR WALKS AND MINIMUM 36" BACK OF CURB AT PARKING AREAS.
11. BACK ROW OF SHRUB PLANTING SHALL BE PLANTED 36" OFF FACE OF BUILDING WALL. GROUND COVERS SHALL BE 12" OUT FROM BUILDING AS REQUIRED BY PLANT SPECIFICATIONS.
12. EXCAVATE EDGE OF ALL PLANTING BEDS TO 4" DEPTH TO FORM A NEAT CRISP DEFINITION.
13. PLANTING BEDS SHALL BE 6-8" ABOVE SOD GRADE.
14. ALL PLANTING BEDS AND TREE PITS SHALL BE MULCHED WITH A 3" SETTLED LAYER OF APPROVED MULCH ON LEVEL AREAS AND APPROVED MULCH ON SLOPES.
15. GRADE ALL AREAS FOR APPROVAL BY LANDSCAPE ARCHITECT BEFORE SODDING.
16. SEASONAL COLOR SHALL BE PLANTED IN FLOWERING STATE.
17. CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIAL, INCLUDING GRASS FOR ONE FULL YEAR FROM DATE OF WRITTEN SUBSTANTIAL COMPLETION. (REFERENCE SPECIFICATIONS)
18. ALL TREES SHALL BE STAKED AND TIED IN THE FIELD BY AN APPROVED METHOD. REMOVE ALL GUY WIRES AND STAKES AT THE END OF THE GUARANTEE PERIOD.
19. TOPSOIL: TOPSOIL SHALL BE FERTILE, FRIABLE, SANDY LOAM AND A NATURAL SURFACE SOIL OBTAINED FROM WELL AREAS REVIEWED BY THE LANDSCAPE ARCHITECT AND POSSESSING CHARACTERISTICS OF REPRESENTATIVE SOILS IN THE PROJECT VICINITY THAT PRODUCE HEAVY GROWTHS OF CROPS, GRASS OR OTHER VEGETATION.
    - TOPSOIL SHALL BE FREE OF SUBSOIL, BRUSH, ORGANIC LITTER OR OR ECTIONABLE WEEDS, CLAY, CLOTS, STUMPS, STONES, ROOTS OR OTHER MATERIAL HARMFUL TO PLANT MATERIALS. SHOULD REGGEERATIVE MATERIALS BE PRESEINT IN THE SOIL, CONTRACTOR SHALL ERADICATE AND REMOVE SUCH GROWTH, BOTH SURFACE AND ROOT, WHICH MAY APPEAR IN THE IMPORTED MATERIAL WITHIN ONE YEAR FOLLOWING ACCEPTANCE OF THE WORK.
    - TOPSOIL SHALL NOT BE HANDLED IN A FROZEN MUDDY CONDITION. THE ACIDITY RANGE SHALL BE BETWEEN 5 AND 7, INCLUSIVE. THE MECHANICAL ANALYSIS OF THE SOIL SHALL BE AS FOLLOWS:

SIEVE SIZE	PERCENT PASSING
1 INCH MESH	99-100%
1/4 INCH MESH	97-99%
NO. 100 MESH	40-60%
NO. 200 MESH	20-40%

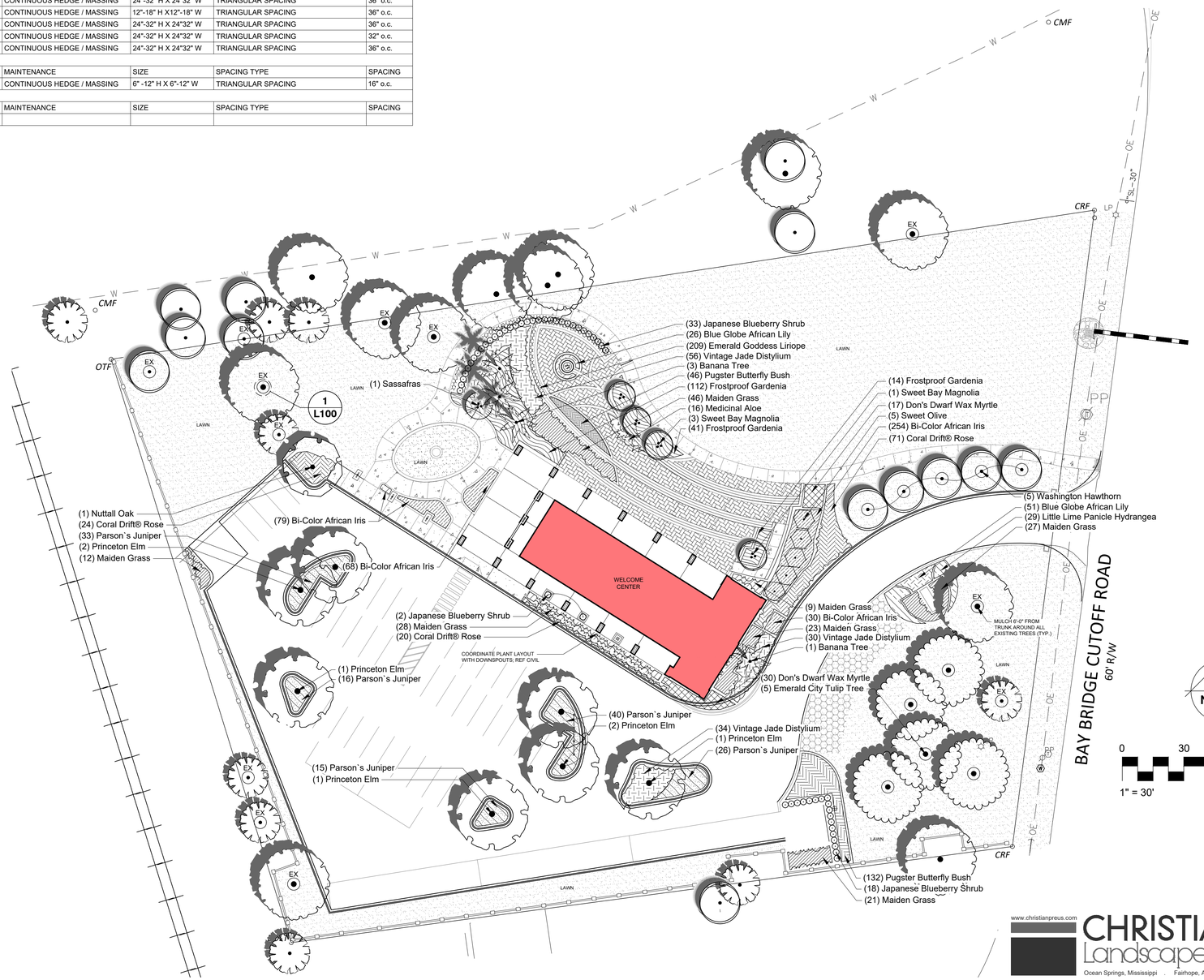
20. STOCKPILE MATERIAL THAT DOES NOT MEET THE REQUIREMENTS MAY, AT THE OPTION OF THE CONTRACTOR, BE IMPROVED BY SCREENING AND THE ADITION OF ORGANIC MATTER AND CHEMICAL ADMIXTURES.
21. APPROVED PRE-EMERGENT WEED CONTROL SHALL BE SPREAD PER MANUFACTURER'S RATES AFTER ALL PLANTINGS HAVE BEEN INSTALLED, IN ALL PLANTED AREAS PRIOR TO MULCHING WITH PINE STRAW.
22. MAINTAIN ALL LANDSCAPE WORK FOR 30 DAYS AFTER SUBSTANTIAL COMPLETION FOR THE ENTIRE PROJECT HAS BEEN PROVIDED IN WRITING TO THE OWNER FROM THE PROJECT ARCHITECT.
23. THE LANDSCAPE ARCHITECT IS NOT RESPONSIBLE FOR THE MEANS AND METHODS OF APPROPRIATENESS OF THE INSTALLATION PROCEDURES UNDERTAKEN BY ANY CONTRACTOR AND IS NOT RESPONSIBLE FOR JOB SAFETY.

EXISTING TREE NOTES:
- PRE AND POST CONSTRUCTION FERTILIZATION OF EVERY EXISTING TREE SHALL BE ACCOMPLISHED BY THE CONTRACTOR BY METHODS USED BY NATIONAL TREE PRESERVATION 662-269-2414 OR APPROVED EQUAL. PROOF OF TREATMENTS ON ALL TREES SHALL BE REQUIRED IN ORDER TO RECEIVE SUBSTANTIAL COMPLETION.
- CONTRACTOR SHALL COORDINATE WITH THE CITY REGARDING ANY PERMITS FOR TREE PRUNING.
- THIS DETAIL IS FOR ALL EXISTING LIVE OAKS IN THE PROJECT AREA - COORDINATE WITH OWNER'S REPRESENTATIVE IN THE FIELD PRIOR TO PRUNING.
- A CERTIFIED ARBORIST MUST ACCOMPLISH THE SUGGESTED PRUNING ALONG WITH THE REMOVAL OF ANY DEAD OR DISEASED LIMBS.



1 EXISTING TREE PRUNING & FERTILIZATION DETAIL

NOT TO SCALE



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STATE OF ALABAMA
REGISTERED LANDSCAPE ARCHITECT
1.21.23

SHEET TITLE

LANDSCAPE PLAN

SHEET NUMBER

L100

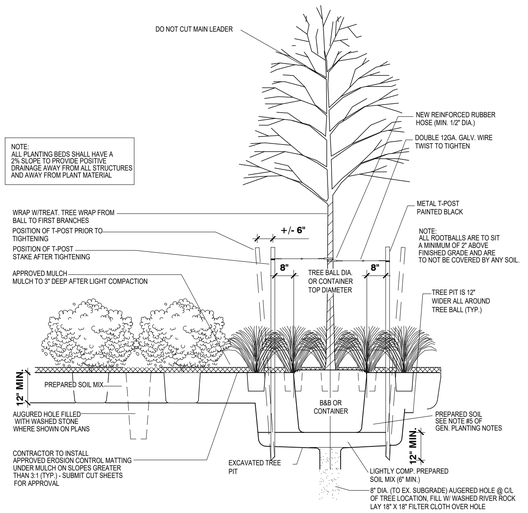
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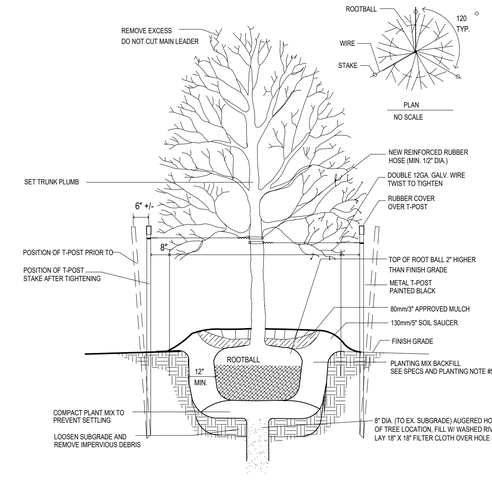
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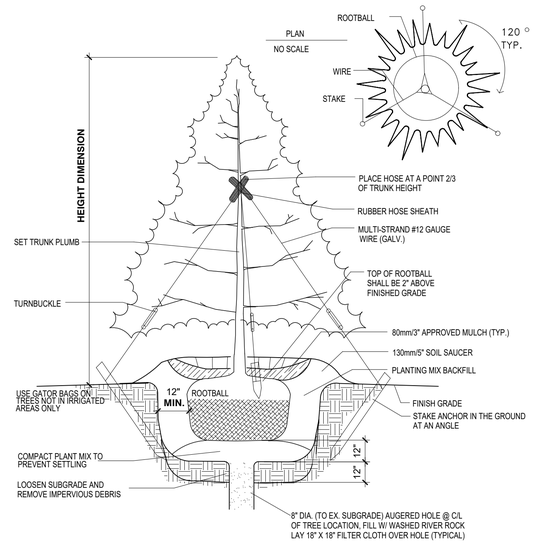
1 TYPICAL PLANTING SECTION IN BED AREAS

NOT TO SCALE



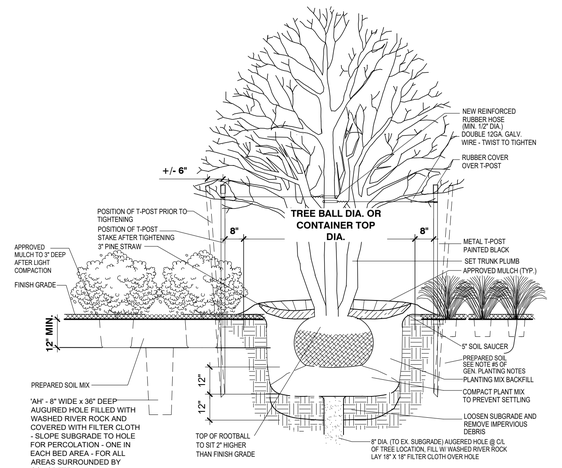
2 TYPICAL TREE PLANTING & GUYING IN LAWN

NOT TO SCALE



3 TYPICAL EVERGREEN TREE PLANTING

NOT TO SCALE



4 TYPICAL MULTI-TRUNK TREE PLANTING IN BED AREAS

NOT TO SCALE

5 SHRUB & GROUNDCOVER DETAIL

NOT TO SCALE

NOTES:
1. SEE PLANTING PLAN FOR BED LAYOUTS.
2. ROWS SHALL BE STRAIGHT & PARALLEL UNLESS BED AREA FOR PARTICULAR PLANT IS SHOWN IN A CIRCULAR OR IRRREGULAR AREA, THEN AS DIRECTED BY LANDSCAPE ARCHITECT.
3. SEE "PLANT USE LIST" FOR PLANT SPACING.

6 PLANT SPACING DETAIL

NOT TO SCALE

NOTE: TRENCH EDGE TO BE LOCATED BETWEEN PLANTING BEDS AND ALL LAWN AREAS.

7 TRENCH BED EDGE DETAIL

NOT TO SCALE

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Architects Engineers Surveyors
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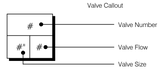
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IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	PSI	DETAIL
LST SST RST	RAIN BIRD R-VAN-STRIP 1806-SAM-P45 SHRUB ROTARY, 5`X15` (LCS AND RCS), 5`X30` (SST) HAND ADJUSTABLE MULTI-STREAM ROTARY W/ 1800 TURF SPRAY BODY ON 6" POP-UP, WITH CHECK VALVE AND 45 PSI IN-STEM PRESSURE REGULATOR. 1/2" NPT FEMALE THREADED INLET. USE RISER IF NECESSARY.	16	30	8/I200
14 ADJ 14 F	RAIN BIRD R-VAN14 1806-SAM-P45 TURF ROTARY, 8`-14` 45-270 DEGREES AND 360 DEGREES. HAND ADJUSTABLE MULTI-STREAM ROTARY W/1800 TURF SPRAY BODY ON 6" POP-UP, WITH CHECK VALVE AND 45 PSI IN-STEM PRESSURE REGULATOR. 1/2" NPT FEMALE THREADED INLET. USE RISER IF NECESSARY.	15	30	8/I200
18 ADJ 18 T	RAIN BIRD R-VAN18 1806-SAM-P45 TURF ROTARY, 13`-18` 45-270 DEGREES AND 360 DEGREES. HAND ADJUSTABLE MULTI-STREAM ROTARY W/1800 TURF SPRAY BODY ON 6" POP-UP, WITH CHECK VALVE AND 45 PSI IN-STEM PRESSURE REGULATOR. 1/2" NPT FEMALE THREADED INLET. USE RISER IF NECESSARY.	41	30	8/I200
24 ADJ 24 F	RAIN BIRD R-VAN24 1806-SAM-P45 TURF ROTARY, 17`-24` 45-270 DEGREES AND 360 DEGREES. HAND ADJUSTABLE MULTI-STREAM ROTARY W/1800 TURF SPRAY BODY ON 6" POP-UP, WITH CHECK VALVE AND 45 PSI IN-STEM PRESSURE REGULATOR. 1/2" NPT FEMALE THREADED INLET. USE RISER IF NECESSARY.	191	30	8/I200
LST SST RST	RAIN BIRD R-VAN-STRIP RD-12-SAM-P45 SHRUB ROTARY, 5`X15` (LCS AND RCS), 5`X30` (SST) HAND ADJUSTABLE MULTI-STREAM ROTARY W/ RD1800 SHRUB SPRAY BODY ON 12" POP-UP, WITH CHECK VALVE AND 45 PSI IN-STEM PRESSURE REGULATOR. 1/2" NPT FEMALE THREADED INLET. USE 6" RISER IF NECESSARY.	8	35	
14 ADJ 14 F	RAIN BIRD R-VAN14 RD-12-SAM-P45 SHRUB ROTARY, 8`-14` 45-270 DEGREES AND 360 DEGREES. HAND ADJUSTABLE MULTI-STREAM ROTARY W/RD1800 SHRUB SPRAY BODY ON 12" POP-UP, WITH CHECK VALVE AND 45 PSI IN-STEM PRESSURE REGULATOR. 1/2" NPT FEMALE THREADED INLET. USE 6" RISER IF NECESSARY.	127	35	
18 ADJ 18 T	RAIN BIRD R-VAN18 RD-12-SAM-P45 SHRUB ROTARY, 13`-18` 45-270 DEGREES AND 360 DEGREES. HAND ADJUSTABLE MULTI-STREAM ROTARY W/RD1800 SHRUB SPRAY BODY ON 12" POP-UP, WITH CHECK VALVE AND 45 PSI IN-STEM PRESSURE REGULATOR. 1/2" NPT FEMALE THREADED INLET. USE 6" RISER IF NECESSARY.	31	35	
24 ADJ 24 F	RAIN BIRD R-VAN24 RD-12-SAM-P45 SHRUB ROTARY, 17`-24` 45-270 DEGREES AND 360 DEGREES. HAND ADJUSTABLE MULTI-STREAM ROTARY W/RD1800 SHRUB SPRAY BODY ON 12" POP-UP, WITH CHECK VALVE AND 45 PSI IN-STEM PRESSURE REGULATOR. 1/2" NPT FEMALE THREADED INLET. USE 6" RISER IF NECESSARY.	6	35	
360	RAIN BIRD 1800-1300AF FLOOD ADJUSTABLE FLOW 1.0 GPM - 2.3 GPM, FULL CIRCLE BUBBLER, 1/2IN. FIPT INLET.	2	30	

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL
	RAIN BIRD PEB 1-1/2" 1" & 1-1/2" EL. REMOTE CONTROL VALVE (OR APP`D. EQ.), IN MIN. 12" ROUND BOX, FILL BOTTOM W/ PEA GRAVEL, (SEE DETAIL)	6	4/I200
	RAIN BIRD PEB 2" 1" & 1-1/2" EL. REMOTE CONTROL VALVE (OR APP`D. EQ.), IN MIN. 12" ROUND BOX, FILL BOTTOM W/ PEA GRAVEL, (SEE DETAIL)	9	4/I200
	DOUBLE CHECK VALVE CONTRACTOR SHALL COMPLY WITH ALL LOCAL CODES AND ORDINANCES TO INSTALLATION AND VENTING OF BACKFLOW PREVENTION DEVICE. COORDINATE WITH LOCAL WATER AUTHORITY FOR REQUIRED MOUNTING HEIGHT OF DOUBLE CHECK VALVE (DCV) PRIOR TO INSTALLATION. (SEE DETAIL)	1	3/I200
C	RAIN BIRD ESP-LXD RAINBIRD ESP-LX TWO WIRE CONTROLLER. PEDESTAL OR WALL MOUNTED, TO BE DETERMINED IN FIELD BY LANDSCAPE ARCHITECT. LOCATION SHOWN ON DRAWING IS A GENERAL REFERENCE. FINAL LOCATION TO BE DETERMINED WITH LANDSCAPE ARCHITECT OR OWNER`S REPRESENTATIVE IN THE FIELD. (SEE DETAIL)	1	1/I200
RS	RAIN BIRD RSD-BEX WIRELESS RAIN SENSOR	1	2/I200
M	WATER METER 1-1/2"	1	
	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21 1/2"	3 203 L.F.	
	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21 3/4"	809.0 L.F.	
	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21 1"	996.7 L.F.	
	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21 1 1/2"	1 340 L.F.	
	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21 2"	522.9 L.F.	
	IRRIGATION MAINLINE: PVC SCHEDULE 40 1 1/2"	9.6 L.F.	
	IRRIGATION MAINLINE: PVC SCHEDULE 40 2"	575.3 L.F.	
	PIPE SLEEVE: PVC SCHEDULE 40 4"	195.7 L.F.	
	PIPE SLEEVE: PVC SCHEDULE 40 6"	150.6 L.F.	

Valve Callout



VALVE SCHEDULE

NUMBER	MODEL	SIZE	TYPE	GPM	WIRE	PSI	PSI @ POC	PRECIP
C1	RAIN BIRD PEB	2"	TURF ROTARY	31.96	439.0	37.8	43.7	0.53 in/h
C2	RAIN BIRD PEB	1-1/2"	SHRUB ROTARY	13.38	433.5	45.4	46.5	0.82 in/h
C3	RAIN BIRD PEB	2"	TURF ROTARY	34.51	427.6	39.5	46.2	0.56 in/h
C4	RAIN BIRD PEB	1-1/2"	TURF ROTARY	27.19	262.4	39.4	42.7	0.48 in/h
C5	RAIN BIRD PEB	2"	SHRUB ROTARY	34.42	256.7	45.4	50.4	0.78 in/h
C6	RAIN BIRD PEB	1-1/2"	TURF ROTARY	30.52	251.2	39.1	42.9	0.46 in/h
C7	RAIN BIRD PEB	1-1/2"	SHRUB ROTARY	26.74	142.9	45.4	47.7	0.79 in/h
C8	RAIN BIRD PEB	1-1/2"	TURF ROTARY	30.61	149.2	38.0	41.0	0.46 in/h
C9	RAIN BIRD PEB	2"	TURF ROTARY	35.52	155.8	39.4	43.6	0.44 in/h
C10	RAIN BIRD PEB	2"	TURF ROTARY	34.26	162.0	39.4	43.4	0.68 in/h
C11	RAIN BIRD PEB	2"	TURF ROTARY	40.32	168.2	39.3	44.8	0.47 in/h
C12	RAIN BIRD PEB	2"	TURF ROTARY	39.66	99.7	39.1	43.5	0.45 in/h
C13	RAIN BIRD PEB	2"	TURF ROTARY	36.18	105.1	39.1	42.9	0.47 in/h
C14	RAIN BIRD PEB	1-1/2"	SHRUB ROTARY	27.67	110.6	44.6	46.9	0.8 in/h
C15	RAIN BIRD PEB	2"	TURF ROTARY	32.36	116.4	39.6	42.7	0.82 in/h
	Common Wire				584.9			

CRITICAL ANALYSIS

Generated:	2023-10-30 22:11
P.O.C. NUMBER: 01	
Water Source Information:	
FLOW AVAILABLE	
Water Meter Size:	1-1/2"
Flow Available	75 GPM
PRESSURE AVAILABLE	
Static Pressure at POC:	65 PSI
Elevation Change:	5.00 ft
Service Line Size:	3"
Length of Service Line:	20 ft
Pressure Available:	63 PSI
DESIGN ANALYSIS	
Maximum Station Flow:	40.32 GPM
Flow Available at POC:	75 GPM
Residual Flow Available:	34.68 GPM
Critical Station:	C5
Design Pressure:	35 PSI
Friction Loss:	6.21 PSI
Fittings Loss:	0.62 PSI
Elevation Loss:	0 PSI
Loss through Valve:	3.56 PSI
Pressure Req. at Critical Station:	45.4 PSI
Loss for Fittings:	0.22 PSI
Loss for Main Line:	2.24 PSI
Loss for POC to Valve Elevation:	0 PSI
Loss for Backflow:	0 PSI
Loss for Water Meter:	2.51 PSI
Critical Station Pressure at POC:	50.4 PSI
Pressure Available:	63 PSI
Residual Pressure Available:	12.6 PSI

IRRIGATION NOTES

1. The irrigation system is diagrammatic based upon the information provided by the owner or the owner's representative. The successful contractor is responsible to install a system that will properly cover all areas indicated on the design. Actual layout of piping, sprinkler heads, valves, controllers and other related equipment shall be determined on site. Minor field changes shall be made at no additional cost to the owner.

It is the responsibility of the irrigation contractor to be familiar with all grade differences, locations of walls, structures and utilities and make the necessary adjustments to accommodate the irrigation system as shown on the drawings. There may be times when it is obvious in the field that unknown obstructions, grades or dimensions that exist might not have been considered in the engineering, such obstructions should be brought to the attentions of the owner's authorized representative. In the event that this notification is not performed, the irrigation contractor shall assume full responsibility for any revisions and costs that occur.

2. This system shall be installed using accepted and quality installation standards as used in the industry. All manufacturers specifications will be followed.

3. Mainline shall be buried a minimum of 12" of cover and a maximum of 18" of cover. Lateral line piping a minimum of 12" of cover. All backfill surrounding the pipe shall be cleaned of materials larger than 1" in size. Backfill shall be added in 6" increments and mechanically tamped.

4.There will be no substitutions or changes to the irrigation design allowed without direct, written approval from the Irrigation Consultant.

5. System design is based on pressure and flow information provided by others, static pressure of 35 psi and the size of the point of connection (P.O.C.) is as indicated on the drawing. The irrigation contractor shall verify water pressures prior to construction. Report differences between requirements and the actual readings to the owner's representative so that any zone adjustments can be made prior to installation.

6. Piping shown in paved area without sleeve is diagrammatic and shall be located inside of the planted area or turf area approximately 1' from any hardscape.

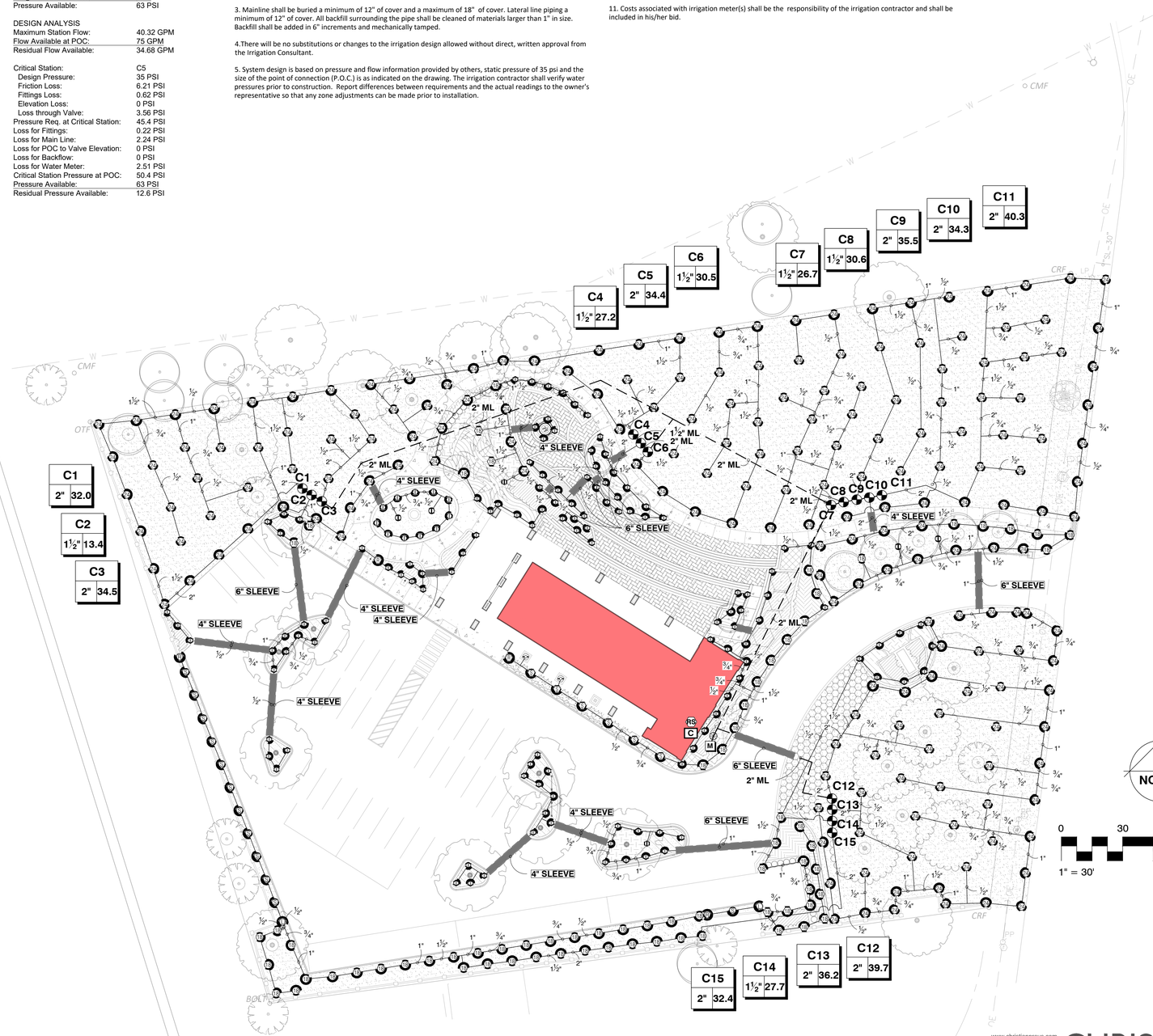
7. All valves shall be placed in valve boxes as shown in the details and all electrical connections shall be sealed with waterproof connectors. Control wire shall be solid copper wire U.L. approved for direct burial in the ground. See details.

8. Controllers, meters, taps and backflow locations are as shown on the plan or as stated in the details and legend. All information is to be verified prior to any installation of the project.

9. The Irrigation Contractor is responsible for all clean up associated with his work.

10. Irrigation contractor shall all provide the first winterization, spring turn on, head adjustments and controller maintenance in bid.

11. Costs associated with irrigation meter(s) shall be the responsibility of the irrigation contractor and shall be included in his/her bid.



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REVISIONS DESCRIPTION

REV	DATE
A	07/17/2023
B	10/02/2023
C	10/27/2023

DATE:	10/02/2023
DESIGNED BY:	CHP
DRAWN BY:	MRP
CHECKED BY:	CHP
PROFESSION:	ARCHITECTURE
PROJECT ARCHITECT:	Andrew Maraska
M.M.A. PROJECT NUMBER:	502100720

STATE OF ALABAMA
REGISTERED LANDSCAPE ARCHITECT
10. 27. 23

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SHEET TITLE
IRRIGATION PLAN

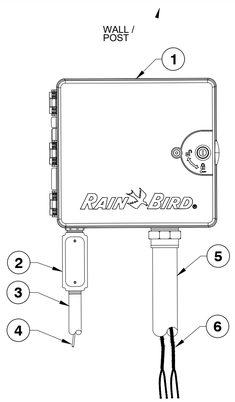
SHEET NUMBER
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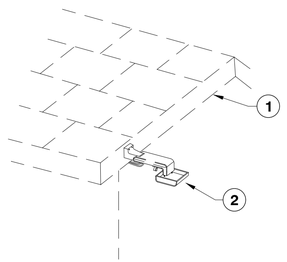
1. TWO-WIRE DECODER CONTROLLER: RAINBIRD IQ ESP-LXD SATELLITE TWO-WIRE DECODER CONTROLLER WITH OPTION TO ADD STATIONS, PROVIDE IQ NCC ETHERNET CARTRIDGE IN PLASTIC CABINET WITH WALL MOUNT. INSTALL CONTROLLERS AND CABINET ON WALL PER MANUFACTURE'S RECOMMENDATIONS.
2. JUNCTION BOX
3. 1-INCH CONDUIT AND FITTINGS TO POWER SUPPLY
4. POWER SUPPLY WIRE
5. 2-INCH CONDUIT AND FITTINGS FOR TWO-WIRE CABLE
6. MAXICABLE TWO-WIRE PATH TO DECODERS; USE A DIFFERENT CABLE JACKET COLOR FOR EACH PATH.

NOTE: PROVIDE AND INSTALL APPROPRIATE GROUND RODS AND WIRING FOR EACH CONTROLLER(S) AS NECESSARY AND AS RECOMMENDED BY MANUFACTURE.

NOTES:
1. IQ ESP-LXD CONTROLLER COMES WITH 50 STATIONS AVAILABLE. TWO ADDITIONAL 75 STATION ESPLXD-SUM75 MODULES MAY BE ADDED TO EXPAND THE CONTROLLER UP TO 200 TOTAL STATIONS.
2. USE STEEL CONDUIT FOR ABOVE GRADE AND SCH 40 PVC CONDUIT FOR BELOW GRADE CONDITIONS.
3. PROVIDE PROPER GROUNDING COMPONENTS TO ACHIEVE GROUND RESISTANCE OF 10 OHMS OR LESS.

1 ESP-LXD TWO-WIRE CONTROLLER

NOT TO SCALE



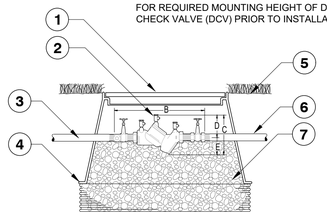
1. ROOF EDGE OR OTHER HIGH OFF THE GROUND SURFACE
2. AUTOMATIC RAIN SHUT-OFF: RAIN BIRD-RAIN CHECK

NOTE: FOR COMPLETE INSTALLATION INSTRUCTIONS, SEE INSTRUCTIONS ENCLOSED W/ RAIN CHECK

2 AUTOMATIC RAIN SHUT-OFF

NOT TO SCALE

NOTE: COORDINATE W/ LOCAL WATER AUTHORITY FOR REQUIRED MOUNTING HEIGHT OF DOUBLE CHECK VALVE (DCV) PRIOR TO INSTALLATION.



1. INSTALL IN JUMBO METER BOX
2. DOUBLE CHECK VALVE SIZED ACCORDING TO LOCAL WATER AUTHORITY
3. SCH. 40 NIPPLE T.O.E.
4. PLASTIC OR C.M.P. PIPE
5. FINISH GRADE
6. SCH. 40 NIPPLE T.O.E.
7. WASHED PEA GRAVEL

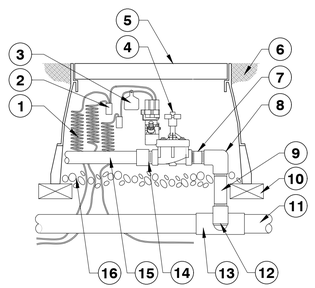
DIMENSIONS (INCHES)

SIZE	B	C	D	E	WIDTH
3/4"	12-1/4"	6-7/8"	4"	2-7/8"	2-3/4"
1"	13-3/4"	6-7/8"	4-3/8"	2-7/8"	2-3/4"
1-1/2"	16-3/4"	9-7/8"	5-1/3"	4-7/8"	4-1/4"
2"	17-3/4"	9-7/8"	6-3/8"	4-7/8"	4-1/4"

NOTE: CONTRACTOR SHALL COMPLY WITH ALL LOCAL CODES AND ORDINANCES IN REFERENCE TO INSTALLATION AND VENTING OF BACKFLOW PREVENTION DEVICE.

3 DOUBLE CHECK VALVE

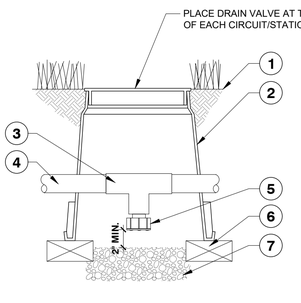
NOT TO SCALE



1. 30-INCH LINER LENGTH OF WIRE, COILED
2. WATERPROOF CONNECTION RAIN BIRD SPLICE-1 (1 OF 2)
3. ID TAG: RAINBIRD VID SERIES
4. REMOTE CONTROL VALVE; PEB-PRS-D
5. VALVE BOX WITH COVER: RAIN BIRD VB-STD
6. FINISH GRADE/TOP OF MULCH
7. PVC SCH. 80 NIPPLE (CLOSE)
8. PVC SCH. 40 ELL
9. PVC SCH. 80 NIPPLE (LENGTH AS REQUIRED)
10. BRICK (1 OF 4)
11. PVC MAINLINE PIPE
12. SCH. 80 NIPPLE (2-INCH LENGTH, HIDDEN) AND SCH. 40 ELL
13. PVC SCH. 40 TEE OR ELL
14. PVC SCH. 40 MALE ADAPTER
15. PVC LATERAL PIPE
16. 3-INCH MINIMUM DEPTH OF 3/4-INCH WASHED GRAVEL

4 PEB-PRS-D ELECTRIC REMOTE CONTROL VALVE

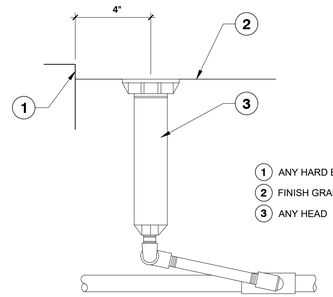
NOT TO SCALE



1. FINISH GRADE
2. VALVE BOX WITH COVER; MIN 6" SIZE
3. PVC SCH. 40 TEE
4. PVC LATERAL PIPE
5. FILTERED DRAIN VALVE: RAIN BIRD 16A-FDV-075
6. BRICK (1 OF 2)
7. MIN. 12"x12"x12", 3/4-INCH WASHED GRAVEL BED

5 DRAIN VALVE

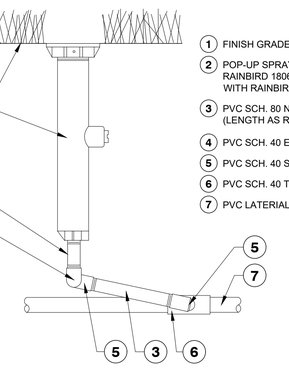
NOT TO SCALE



1. ANY HARD EDGE SURFACE
2. FINISH GRADE
3. ANY HEAD

7 ANY HEAD

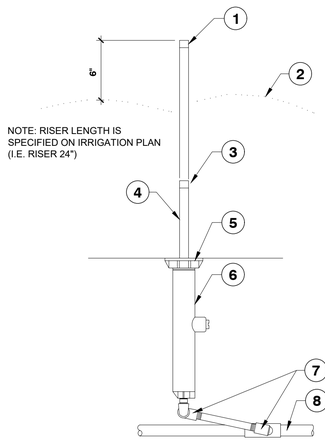
NOT TO SCALE



1. FINISH GRADE/TOP OF MULCH
2. POP-UP SPRAY SPRINKLER: RAINBIRD 1806-SAM-PRS WITH 1800 VPC WITH RAINBIRD ROTARY NOZZLE
3. PVC SCH. 80 NIPPLE (LENGTH AS REQUIRED)
4. PVC SCH. 40 ELL
5. PVC SCH. 40 STREET ELL
6. PVC SCH. 40 TEE OR ELL
7. PVC LATERAL PIPE

8 1806 HEAD IN LAWN

NOT TO SCALE

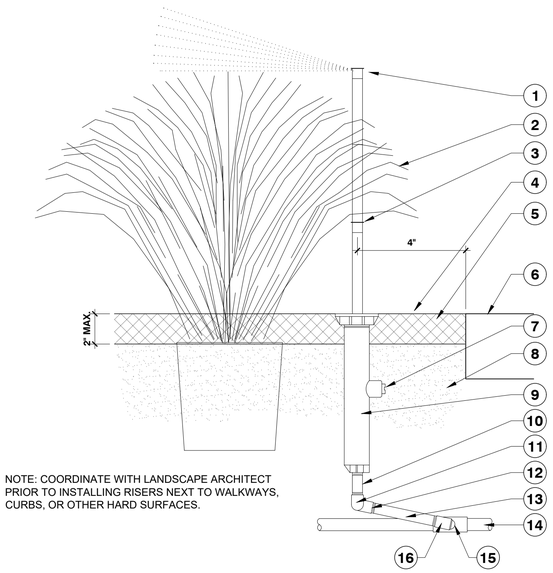


NOTE: RISER LENGTH IS SPECIFIED ON IRRIGATION PLAN (I.E. RISER 24")

1. POSITION OF RISER WHEN SYSTEM IS "ON"
2. SHRUB MASS
3. POSITION OF RISER WHEN SYSTEM IS "OFF" COORDINATE WITH LANDSCAPE ARCHITECT PRIOR TO IONSTALLING RISERS NEXT TO WALKWAYS, CURBS, OR OTHER HARD SURFACES.
4. RISER OR 6" EXTENSION
5. HEAD TO BE AT THE ELEVATION OF THE MULCH IN PLANTING BED
6. 12" POP-UP
7. SWING JOINT (SEE SPECS)
8. LATERAL

9 12-INCH POP-UP WITH RISER

NOT TO SCALE



NOTE: COORDINATE WITH LANDSCAPE ARCHITECT PRIOR TO INSTALLING RISERS NEXT TO WALKWAYS, CURBS, OR OTHER HARD SURFACES.

1. POSITION OF 6" RISER EXTENSION OR RISER WHEN CIRCUIT/STATION IS "ON"
2. GROUNDCOVER
3. POSITION OF 6" ROSER EXTENSION OR RISER WHEN CIRCUIT/STATION IS "OFF". COORDINATE WITH LANDSCAPE ARCHITECT PRIOR TO INSTALLING RISERS NEXT TO WALKWAYS, CURBS, OR OTHER HARD SURFACES
4. TOP OF PLANTING BED MULCH
5. PLANTING BED PINE STRAW MULCH
6. WALK, OR HARD EDGED SURFACE
7. SIDE INLET
8. PLANTING BED PREPARED SOIL MIX (SEE PLANTING DETAILS)
9. 1812 POP-UP SPRINKLER
10. SCH. 80 PVC NIPPLE (LENGTH AS REQUIRED)
11. SCH. 40 PVC ELL
12. SCH. 40 PVC STREET ELL
13. SCH. 80 PVC NIPPLE (LENGTH AS REQUIRED)
14. PVC LATERAL PIPE
15. SCH. 40 PVC STREET ELL
16. SCH. 40 PVC TEE OR ELL

6 1812 WITH 6" RISER EXTENION IN PLANTING BED

NOT TO SCALE

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City of Mobile
1959 Bay Bridge Road Cutoff
Mobile, AL. 36610

REVISIONS DESCRIPTION
- 30% Submission
- 90% Submission
- 100% Submission

REV	DATE
A	07/17/2023
B	10/02/2023
C	10/27/2023

DATE: 10/02/2023
DESIGNED BY: CHP
DRAWN BY: MRP
CHECKED BY: CHP
PROFESSION: ARCHITECTURE
PROJECT ARCHITECT: Andrew Marasca
M.M.A. PROJECT NUMBER: 502100720

STATE OF ALABAMA
REGISTERED LANDSCAPE ARCHITECT
CHRISTIAN PREUS
NUMBER
10.27.23

SHEET TITLE

IRRIGATION PLAN

SHEET NUMBER

I100

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