

PROJECT MANUAL

FOR

**EAST BAY PARK IMPROVEMENTS
BOBBY ALFORD PAVILION PROJECT #1222
FUNDED BY CDBG GRANT
#CV1-019**

**CITY OF GEORGETOWN
SOUTH CAROLINA**

DATE OF ISSUE: January 25, 2023

FOR CONSTRUCTION BID

REV	DATE	DESCRIPTION	BY	CHK	APR
0	11/15/2022	For Agency Review			
1	01/25/2023	For Construction Bid			

CITY OF GEORGETOWN
PUBLIC WORKS DEPARTMENT
PO DRAWER 939
GEORGETOWN SC 29442
(843) 545-4500

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Note: All CDBG forms must be submitted by the successful bidder prior to award.

II. ASBESTOS INSPECTION REPORT

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ENUMERATION OF THE DOCUMENTS

000100-3

(END OF SECTION)

**SECTION 000100
ENUMERATION OF THE DOCUMENTS**

The drawings, specifications and addenda, which form a part of this contract as set forth in Paragraph 1 of the General Conditions, Contract and Contract Documents are enumerated in Section 00005 - Table of Contents.

The order of precedence when conflicts in the documents occur is as follows:

1. Permits from other Agencies as may be required by law
2. Change Orders and/or supplemental agreements according to the latest date
3. Contract Agreement and CDBG Special Provisions
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14. Referenced Specifications: AWWA, ASTM, ACI

The figured dimensions shown on the Drawings and in the Specifications may not, in every case agree with the scale dimension. Figured dimensions take precedence over scaled dimensions and finer scaled drawings take precedence over coarser scaled drawings, i.e. one inch equals twenty feet drawings takes precedence over one inch equals fifty feet drawings.

(END OF SECTION)

DOCUMENT 000107 - SEALS PAGE

1.1 DESIGN PROFESSIONALS OF RECORD

PRIME ARCHITECT
ROSENBLUM COE ARCHITECTS, INC.
Steven H. Coe, AIA, LEED BD+C
License #: AR. 5573

Responsible for Divisions 00-33 except
where indicated as prepared by other
design professionals of record.

Firm Seal if Applicable

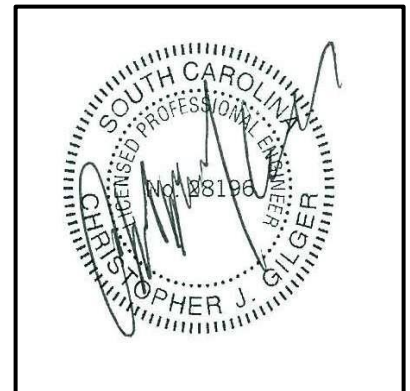
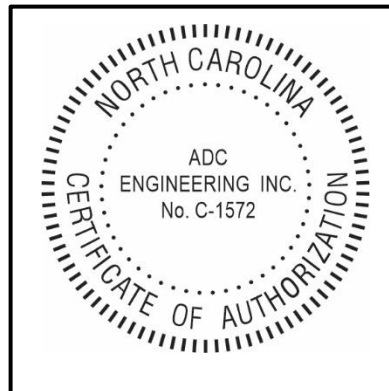


Individual Seal



STRUCTURAL ENGINEER
ADC ENGINEERING
Christopher Gilger
License #28196

Responsible for sections:
033000 Cast-In-Place Concrete
042200 Unit Masonry
050520 Post Installed Anchors
051200 Structural Steel



END OF DOCUMENT

**SECTION 000150
REFERENCES**

The following reference shall be used hereinafter:

<p><u>Owner:</u> City of Georgetown, SC 1134 North Fraser Street Georgetown, SC 29440</p>	<p>The City of Georgetown hereinafter will be referred to as the “Owner” and/or the “City”.</p>
<p><u>City Administrator:</u> Mrs. Sandra Yúdice, Ph.D. 1134 North Fraser Street Georgetown, SC 29440</p>	<p>Mrs. Yúdice hereinafter will be referred to as the “City Administrator”.</p>
<p><u>Risk Manager:</u> Ms. Ieshia Tucker 1134 North Fraser Street Georgetown, SC 29440</p>	<p>Ms. Tucker hereinafter will be referred to as the “Risk Manager”.</p>
<p><u>Purchasing Agent:</u> Mrs. Daniella Howard 1134 North Fraser Street Georgetown, SC 29440</p>	<p>Mrs. Daniella Howard hereinafter will be referred to as the “Purchasing Agent”.</p>
<p><u>Public Works & Utilities Director :</u> Mr. Scott Whittier Director</p>	<p>Mr. Whittier hereinafter will be referred to as the “Director”.</p>
<p><u>Project Manager:</u> Mr. Orlando Arteaga, P.E. City Engineer 2377 Maybank Drive Georgetown, SC 29440</p>	<p>Mr. Arteaga hereinafter will be referred to as the “Project Manager”.</p>
<p><u>Architect</u> Mr. Steve Coe, AIA Rosenblum Coe Architects, Inc.</p>	<p>Mr. Coe hereinafter will be referred to as the “Architect”.</p>

(END OF SECTION)

SECTION 000200
ADVERTISEMENT FOR BIDS

Project Title: East Bay Park Improvements - Bobby Alford Pavilion Project #1222

Owner: City of Georgetown

Project No.: 1222 (CDBG Covid Grant no.: #CV1-019)

Separate sealed bids for **City of Georgetown** for East Bay Park Improvements - **Bobby Alford Pavilion**

The scope of work includes:

The Information for Bidders, Bid Form, Contract Plans, Specifications, Bid Bond, Performance and Payment Bond, and other contract documents may be examined at the following: City's website.

Copies may be obtained from the **City's website** upon payment of **(\$0)** for each set. Each bidder must deposit security or **bid bond** in the amount and form specified in the Information for Bidders.

Other qualification or bid requirements include: **General Contractors must be licensed as Commercial Building Contractors by the SCLLR-Contractor's Licensing Board.**

This project is being funded in whole or in part by the Community Development Block Grant Program (CDBG). All federal CDBG requirements will apply to the contract. All contractors and subcontractors are required to be registered in the federal System for Award Management (SAM). Bidders on this work will be required to comply with the President's Executive Order No. 11246 & Order No. 11375 which prohibits discrimination in employment regarding race, creed, color, sex, or national origin. Bidders must comply with Title VI of the Civil Rights Act of 1964, the Davis-Bacon Act, the Anti-Kickback Act, the Contract Work Hours and Safety Standards Act, and 40 CFR 33.240. The CDBG application, including the cost estimate, is available for review by contacting Mrs. Marsha Smith at 843-546-8502. .

Bidders must also make positive efforts to use small and minority-owned business and to offer employment, training and contracting opportunities in accordance with Section 3 of the Housing and Urban Development Act of 1968. Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the contract.

The owner reserves the right to waive any irregularities, or to reject any or all bids.

No bidder may withdraw his bid within **(90)** days after the actual date of the opening thereof.

"EQUAL EMPLOYMENT OPPORTUNITY"

Site Visit

Site visits are strongly encouraged. Submission of bid implies that the contractor has visited the site and is familiar with the existing conditions of the site. Failure to visit the site shall in no way relieve any bidder from any obligation in respect to their bid.

Non-Mandatory Pre-Bid Conference

A Non-Mandatory pre-bid conference will be held at 2:00 PM, EST (Local Time Wednesday, February 8, 2023) at the Water Utilities Department, 2377 Maybank Drive, Georgetown, SC 29440.

Davis-Bacon Statutes

The successful Bidder must comply with Davis Bacon statutes during the progress of the project.

The Contractor must include the applicable prevailing wages and provisions for compliance with the Davis-Bacon Act as supplemented by the Department of Labor regulations. Wage Decision has been downloaded from SAM.gov and included in the Appendix.

The fixed bid price must include such provisions.

SAM.gov registration

Bidders must not be suspended or debarred from federal type contracts. A verification of compliance will be obtained prior to contract award.

Note:

1. Bid documents will be modified only by written addenda. It is the responsibility of the Bidder to obtain information regarding projects directly from the City's website, www.georgetownsc.gov, under "Business/Bid/RFPs". Bids received after the due date and specified time will not be considered for any reason and will remain unopened. The City will not accept bids by fax or electronic mail.
2. When the Procurement Division is closed due to force majeure, bid openings will be postponed to the same time on the next official business day.

(END OF SECTION)

001000
INFORMATION FOR BIDDERS

1. PROJECT SUMMARY

Project includes selective demolition and renovation of the existing Bobby Alford Center to an open-air pavilion within same footprint. Project will include selective demolition of approximately 75% of existing building exterior walls, removal of interior partitions, removal of existing toilet fixtures, removal of existing metal roof and original pre-engineered roof purlins, and removal of interior finishes. Renovations include construction of new toilet rooms inside pavilion, new masonry column surrounds, new structural bracing, new standing seam metal roofing and support framing, new masonry BBQ pit and masonry chimney (as alternate), MEP to support the renovations, and limited site improvements to provide accessible parking.

2. RECEIPT AND OPENING OF BIDS

All procurement procedures are subject to the Owner's procurement policies as outlined in Section 2-187 of the City's municipal code.

The Owner's Purchasing Ordinance can be found in its entirety on the [City's website, www.georgetownsc.gov](http://www.georgetownsc.gov).

It is the sole responsibility of the bidder to have their Bids delivered to the Owner before the closing hour and date. The Owner assumes no responsibility **for technological failure in submitting Bids electronically**. It is the sole responsibility of the bidder to consider that their Bid was submitted on time, and that their PDF file/files are not corrupt.

Submittals may be rejected if deemed non-responsive.

To be considered, interested parties **must** submit the following no later than the aforementioned deadline:

The City **WILL NOT** accept bids by:

Fax
Email

Submit bid electronically through the Owner's website, www.georgetownsc.gov.

[Click here to submit electronically.](#)

Submittal package must include **all** of the following items. If more than one PDF file is uploaded, each PDF file should be clearly labeled as such:

1. Submit bid package, which must include these items:
 1. Complete Bid Form – See Section 00311
 2. Bid Bond or Bid Security – See Section 00350

2. Bid must be received electronically through the Owner's website, www.georgetownsc.gov, no later than the aforementioned deadline. Bids will be publicly opened and read aloud via the Owner's public Facebook page, <https://www.facebook.com/Cityofgtown/>. **It is the sole responsibility of the bidder to have their bid delivered to the Owner before the closing hour and date. The Owner assumes no responsibility for technological failure in submitting Bids electronically. It is the sole responsibility of the bidder to consider that their Bid was submitted on time, and that their PDF file/files are not corrupt.** Late Bids will not be accepted nor considered. The official clock shall be that of the Owner's Purchasing Agent, or designee. The Owner reserves the right to accept or reject any or all Bids and to waive any informalities and technicalities in the Bid process. No additional fees, costs, or any other reimbursable expenses will be allowed.

3. This solicitation does not commit the Owner to award a contract. The Owner reserves the right to waive any technicalities or informalities and to accept or reject any and/or all submissions as deemed by its sole judgment to be in its best interest. The Owner also reserves the right to terminate the selection process without notice, to waive any irregularities in any submittal, and to request additional information from any of the bidders submitting a Bid.

4. Any bidder may withdraw their Bid only by written request, at any time prior to the scheduled opening of responses. Partial or incomplete Bids may be rejected.

5. The City reserves the right to accept or reject any or all bids and to waive any informalities and technicalities in the bid process. No additional fees, costs, or any other reimbursable expenses will be allowed.

6. The City reserves the right to waive any technicalities or informalities and to accept or reject any and/or all submissions as deemed by its sole judgment to be in its best interest. The City also reserves the right to terminate the selection process without notice, to waive any irregularities in any submittal, and to request additional information from any of the bidders submitting a bid.

7. The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. Bid price shall be firm for a period of ninety (90) days

3. PREPARATION OF BID

Each bid must be submitted on the prescribed form. All blank spaces for bid prices must be filled in with ink or typewritten.

Bids that are incomplete, unbalanced, conditional or obscure, or which contain additions

not called for, erasures, alterations, or irregularities of any kind, or which do not comply with the Information for Bidders, may be rejected at the option of the Owner.

The correct total amount bid for the completed work is defined as the correct sum total of the amounts bid for the individual items in the proposal. The correct amount bid for each unit price item is defined as the correct product of the quantity listed for the item by the unit price bid.

Each bid must be submitted electronically with all the requested documents.

4. SUBCONTRACTS

The bidder is specifically advised that any person, firm, or other party to whom it is proposed to award a subcontract under this contract must be acceptable to the Owner. Subcontractors must also be registered in SAM.gov and not be suspended or debarred.

5. QUALIFICATION OF BIDDER AND SUBCONTRACTORS

The Owner may make such investigations as is deemed necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request.

The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein. Conditional bids will not be acceptable.

6. BID SECURITY

Each bid must be accompanied by cash, certified check of the bidder, or a bid bond prepared on the form of bid bond attached hereto, duly executed by the bidder as principal and having as surety thereon a surety company approved by the Owner, in the amount of five percent (5%) of the bid. Checks will be returned to all except the three (3) lowest bidders within three (3) days after the opening of bids, and the remaining checks will be returned promptly after the Owner and the accepted bidder have executed the contract, or, if no award has been made within ninety (90) days after the date of the opening of the bids, upon demand of the bidder at any time thereafter so long as bidder has not been notified of the acceptance of its bid.

Bid security shall be a legitimate bid bond provided by a surety company authorized to do business in South Carolina, or the equivalent in, certified check, cashiers' check, or money order." A digital copy of the Bid Security must be submitted along with the electronic bid. The hard copy bid bond or check must be received by the purchasing agent within three (3) working days of the solicitation deadline. Mail or hand deliver only to:

City of Georgetown
Attn. Purchasing Agent
1134 N. Fraser Street

7. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT

The successful bidder, upon failure or refusal to execute and deliver the contract and bonds required within ten (10) days after they have received Notice of Award of their bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with the bid.

8. TIME OF COMPLETION AND LIQUIDATED DAMAGES

Bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" of the Owner and to fully complete the project within the number of consecutive calendar days thereafter as indicated on the Bid Form. Bidder must agree also to pay as liquidated damages the sum indicated on the Bid Form for each consecutive calendar day thereafter as hereinafter provided in General Conditions.

9. CONDITIONS OF WORK

Each bidder must inform himself fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of the obligation to furnish all material and labor necessary to carry out the provisions of the contract.

Insofar as possible, the Contractor in carrying out the work must employ such methods and means as will not cause any interruption of, or interference with, the work of any other contractor.

10. ADDENDA AND INTERPRETATIONS

No interpretation of the meaning of the plans, specifications, or other pre-bid documents will be made to any bidder orally. Each request for such interpretation should be in writing and addressed to the Project Manager. To be given consideration, the request must be received at least five (5) days prior to the date fixed for the opening of bids.

Any and all such interpretations and any supplemental instructions will be in the form of written addenda which, if issued, will be posted in the Project listing that is located at the City of Georgetown website <http://www.georgetownsc.gov> no later than three (3) days prior to the date fixed for the opening of bids. It shall be the bidder's responsibility to check for addenda before issuing its bid. Failure of any bidder to receive any addendum shall not relieve the bidder from any obligation under its bid as submitted. All addenda so issued shall become part of the contract documents.

11. BID, PAYMENT, AND PERFORMANCE BONDS

When a construction contract is awarded in excess of One Hundred Thousand Dollars (\$100,000) a payment and performance bond shall be delivered by the successful bidder to the City and shall become binding on the parties upon execution of the contract.

Simultaneously with bidder's delivery of the executed contract, the Contractor shall furnish a surety bond or bonds as secured for the faithful performance of this contract and for the payment of all persons performing labor on the project under this contract, as specified in General Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company. An agent must be provided with a South Carolina license authorized to sign and execute the bond(s). Countersignature by an agent residing in South Carolina will not be required, but execution by an agent holding a South Carolina non-resident license is required. The Bid Bond shall be an amount equal to or at least five percent (5%) of the amount of the bid. The Performance Bond shall be in the amount of one-hundred percent (100%) of the bid and the Payment Bond shall be in the amount of one-hundred percent (100%) of the bid.

12. POWER OF ATTORNEY

Attorneys-in-fact who sign bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

13. NOTICE OF SPECIAL CONDITIONS

Attention is particularly called to those parts of the contract documents and specifications which deal with the following:

- A. Inspection and testing of materials
- B. Insurance requirements
- C. Stated allowances
- D. Permits and Rights-of-way
- E. Hazardous Gas Safety (Section 01060)

14. LAWS AND REGULATIONS

The Bidder's attention is directed to the fact that all applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

15. METHOD OF AWARD - LOWEST QUALIFIED BIDDER

If at the time this contract is to be awarded, the lowest base bid or alternate bid submitted by a responsible bidder does not exceed the amount of funds then estimated by the Owner as available to finance the contract, the contract will be awarded on the base bid or alternate bid. If such bid exceeds such amount, the Owner may reject all bids or may award the contract on the base bid combined with such deductible alternates applied in numerical order in which they are listed in the Form of Bid, as produces a net amount which is within the available funds.

The Owner will decide which the lowest qualified bidder is, and in determining such bidder, the following elements will be considered for each bidder:

- A. Maintains a permanent place of business.
- ~~B. Has successfully completed other work with the City~~

- C. Has adequate plant equipment and personnel to perform the Work properly and expeditiously.
- D. Has suitable financial status to meet obligations incident to the work.
- E. Has appropriate technical experience with a minimum of five (5) years of practice.

16. RIGHT TO INCREASE OR DECREASE THE AMOUNT OF WORK

The work comprises approximately the quantities shown in the bid form which will be used as a basis for comparison of Bids and not for final estimate. The Owner does not, by expression or by implication, agree that the actual amount of work shall correspond with the estimated quantities. The Owner reserves the right to increase or decrease the amount of work under the Contract of the work contemplated, at the unit prices quoted in the Bid.

17. OBLIGATION OF BIDDER

At the time of the opening of bids, each bidder will be presumed to have inspected the site and to have read and be thoroughly familiar with the plans and contract documents, including all addenda. If a site visit is required, contact the Project Manager to schedule a date and time. The failure or omission of any bidder to examine any form, instrument, or document shall in no way relieve any bidder from any obligation in respect to its bid.

18. SITE VISIT PRIOR TO BID

Site visit is not mandatory but bidders are encouraged to visit the site to become familiar with the surrounding conditions.

SECTION 001100
CONTRACTOR'S AND SUBCONTRACTOR'S
INSURANCE REQUIREMENTS

1. As required under Paragraph 29 of the General Conditions, the Contractor shall not commence work under this Contract until he has obtained all the insurance required under this paragraph and such insurance has been approved by the Owner, nor shall the Contractor allow any Subcontractor to commence work on his Subcontract until all similar insurance required of the Subcontractor has been so obtained and approved.
2. Unless otherwise specified in this Contract, the Contractor shall, at its sole expense, maintain in effect at all times, during the performance of work, insurance coverage with limits not less than those set forth below with insurers and under forms of policies satisfactory to Owner.
3. The Contractor shall deliver Certificates of Insurance to the ARCHITECT no later than ten (10) days after award of the Contract but in any event, prior to execution of the Contract by the Owner and prior to commencing work on the site as evidence that policies providing such coverage and limits of insurance are in full force and effect.
 - A. Certificates shall provide not less than thirty (30) days advance notice will be given in writing to the Owner prior to cancellation, termination, or material alteration of said policies of insurance.
 - B. Certificates shall identify on their faces the project name "**BOBBY ALFORD PAVILION PROJECT**" and the "**PROJECT NUMBER 1222**".
4. Additional Insured: The Commercial General Liability and Excess Liability (Umbrella) insurance policies shall be endorsed to include the Owner as additional insured.
5. The Owner is not maintaining any insurance on behalf of the Contractor covering against loss or damage to the work or to any other property of the Contractor unless otherwise specifically stated herein and as may be described by appendix hereto. In the event the Contractor maintains insurance against physical loss or damage to the Contractor's construction equipment and tools, such insurance shall include an insurer's waiver of rights of subrogation in favor of Owner.
6. The Contractor shall indemnify the Owner and the ARCHITECT as stated in Part 47 of The General Conditions.

CONTRACTOR'S AND SUBCONTRACTOR'S
INSURANCE REQUIREMENTS

001100-1

7. Insurance Requirements:

Contractor shall provide coverage for not less than the following amounts, or greater where required by Laws and Regulations:

a. Workers' Compensation and Employer's Liability

Workers' Compensation	Statutory
Employer's Liability	
Each Accident	\$ 500,000.00
Each Employee	\$ 500,000.00
Policy Limit	\$ 500,000.00

b. Commercial General Liability

General Aggregate	\$ 2,000,000.00
Products - Completed Operations Aggregate	\$ 2,000,000.00
Personal and Advertising Injury	\$ 1,000,000.00
Bodily Injury and Property Damage—Each Occurrence	\$ 1,000,000.00

c. Automobile Liability

Combined Single Limit (Bodily Injury and Property Damage)	\$ 1,000,000.00
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d. Excess or Umbrella Liability

Per Occurrence	\$ 2,000,000.00
General Aggregate	\$ 2,000,000.00

(END OF SECTION)

**SECTION 003110
BID FORM**

**BOBBY ALFORD PAVILION PROJECT
CDBG GRANT #CV1-019**

FOR THE
THE CITY OF GEORGETOWN
SOUTH CAROLINA

Date: _____
Project No.: _____

PROPOSAL OF _____

(Hereinafter called "Bidder"), a _____ (State)

Corporation/partnership/individual (Strikeout inapplicable terms) doing business as

TO: Mrs. Daniella Howard
Purchasing Agent
City of Georgetown

Gentlemen:

The Bidder, in compliance with your invitation for bids for the **BOBBY ALFORD PAVILION PROJECT** having examined the drawings and specifications with related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the Contract Documents, within the time set forth therein, for the Sum of:

_____ Dollars (\$_____)

The price indicated above shall include all labor, materials, overhead, profit, insurance, taxes, fees, etc., to cover all expenses incurred in performing the work required under the Contract Documents, of which this proposal is a part.

The price indicated above shall also include the amounts indicted as Allowances and as described in the Division 1 Section "Allowances". Should actual cost vary from the Allowance listed, The Contract Sum shall be adjusted by Change Order.

Bidder hereby agrees to commence work under this contract on or before a date to be specified in written "Notice to Proceed" of the Owner and to fully complete the project within **One Hundred and Eighty (180) consecutive calendar days** thereafter as stipulated in the specifications.

Bidder further agrees to pay as liquidated damages the sum of **\$500.00** for each consecutive calendar day thereafter as hereinafter provided in Paragraph 19 of the General Conditions.

The specifications and addenda are complementary of each other. What is called for by one shall be as binding as if called for by all. If a conflict between any of the above is discovered by the contractor, the problem shall be referred to the Owner as soon as possible for resolution by the Owner. Should a conflict occur which is not resolved before bid time and/or is necessary to comply with mandatory requirements (i.e., codes, ordinances, etc.), it shall be the contractor's responsibility to price and bid the more expensive method.

Bidder acknowledges receipt of the following addendum:

No.: _____ Dated: _____

No.: _____ Dated: _____

No.: _____ Dated: _____

No.: _____ Dated: _____

No.: _____ Dated: _____

BID COST TABLE

No.	Description	Qty.	Unit	Unit Price (\$)	Cost (\$)
1	Mobilization	1	LS		
2	Demolition including Asbestos Abatement	1	LS		
3	Sitework including ADA parking	1	LS		
4	Concrete	1	LS		
5	Masonry	1	LS		
6	Structural Steel and Miscellaneous Items	1	LS		
7	Rough Carpentry	1	LS		
8	Metal Roof, Purlins, and Flashing	1	LS		
9	Door, Frames, and Hardware	1	LS		
10	Exterior and Interior Painting	1	LS		
11	Steel and Concrete Blasting	1	LS		
12	Cement Plastering	1	LS		
13	Concrete Floor Sealer	1	LS		
14	Toilet Compartments and Accessories	1	LS		
15	Plumbing	1	LS		
16	Heating and Air Conditioning	1	LS		
17	Electrical Work	1	LS		
TOTAL BID AMOUNT					
ALTERNATES					
1	Fire Place and Chimney	1	LS		
2	Stucco on CMU walls in lieu of Painting	1	LS		
3	F/I Overhead Ceiling Fan	1	LS		
4	Delete New Brick and CMU Piers	1	LS		

Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informality in the bidding.

The Bidder agrees that this Bid shall be good and may not be withdrawn for a period of ninety (90) calendar days after the scheduled closed time for receiving bids.

The above Unit Prices shall include all labor, materials, overhead, bonds, profit, insurance, taxes, fees, etc., to cover the finished work called for.

The undersigned declares that his firm is (delete those not applicable):

A corporation organized and existing under the laws of the

State of _____.

A partnership consisting of

_____.

The undersigned declares that the person or persons signing this proposal is fully authorized to sign the proposal on behalf of the firm listed and to fully bind the firm listed to all the conditions and provisions thereof.

It is agreed that no person or persons or company other than the firm listed below or as otherwise indicated hereinafter has any interest whatsoever in this proposal or the contract that may be entered into as a result thereof, and that in all respects the proposal is legal and fair, submitted in good faith, without collusion or fraud.

[SEAL – (If bid is by a corporation)]

Respectfully submitted:

BY: _____

(Print Name)

(Title)

(Business Address)

(Email)

(Telephone)

S.C. General Contractor's License No. _____

(END OF SECTION)

DOCUMENT 003126 - EXISTING HAZARDOUS MATERIAL INFORMATION

1.1 EXISTING HAZARDOUS MATERIAL INFORMATION

- A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information, but are not a warranty of existing conditions. This Document and its attachments are not part of the Contract Documents.
- B. An existing limited asbestos and lead report for Project, prepared by Asbestos Inspections, LLC, dated May 3, 2017 and updated dated November 22, 2022, is available for viewing as appended to this specification manual.
- C. Abatement Plan: See Asbestos Abatement Plan, dated November 22, 2022 for Contractor requirements in removing asbestos containing materials. Appended to this specification manual.
- D. Related Requirements:
 - 1. Division 00 "Bidding Instructions and Contract Requirements" for the Bidder's responsibilities for examination of Project site and existing conditions.
 - 2. Document 003119 "Existing Condition Information" for information about existing conditions that is made available to bidders.
 - 3. Section 024119 "Selective Demolition" for notification requirements if materials suspected of containing hazardous materials are encountered.

END OF DOCUMENT 003126

**SECTION 003500
BID BOND**

KNOW ALL MEN BY THESE PRESENT:

That we, the undersigned _____, as Principal, and _____, as Surety, are hereby held and firmly bound unto the **City of Georgetown, South Carolina**, as Owner, in the penal sum of (5% of total bid) _____ Dollars _____ Cents (\$ _____), for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed this _____ day of _____, 20_____.

The condition of the above obligation is such that:

WHEREAS, the Principal has submitted to _____ a certain Bid, attached hereby and by reference made a part hereof, to enter into a contract in writing for the _____.

NOW, THEREFORE,

- (A) If said Bid shall be rejected, or
- (B) If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a Bond for faithful performance of said contract, and for the payment of all persons performing labor furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid, then this obligation shall be void; otherwise the same shall remain in force and effect - it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its Bond shall be in no way impaired or affected by an extension of the time within which the Owner may accept such Bid, and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Principal

(Corporate Seal)

By : _____(L.S)

Surety

(Corporate Seal)

By : _____(L.S)

Important: Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

(END OF SECTION)

**SECTION 005000
CONTRACT**

STATE OF SOUTH CAROLINA

COUNTY OF GEORGETOWN

THIS AGREEMENT, entered into this ____ day of _____, 20____ and effective immediately by and between _____, doing business as a (individual/partnership/corporation), with its principal office in the City of _____, _____ County, _____ State,(hereinafter called the "Contractor") and the City of Georgetown, a duly organized and validly existing political body of the State of South Carolina (hereinafter called "City"),

WITNESSETH THAT WHEREAS, The City desires to engage the services of a professional contractor for the purpose of **BOBBY ALFORD PAVILION PROJECT**, hereinafter referred to as "Project"; and,

WHEREAS, The City has solicited bids for same by that certain Request for Bids for Construction Services, hereinafter referred to as "RFB", a copy of which is attached hereto for all purposes as **EXHIBIT "1"**; and,

WHEREAS, The Contractor has represented to City that it has the qualifications, experience, expertise, training, and personnel to timely perform the Project for City; and,

WHEREAS, The Contractor has expressed its desire to do so by their bid opened _____, 20____, hereinafter referred to as "Bid Form", a copy of which is attached hereto for all purposes as **EXHIBIT "2"**;and,

WHEREAS, the parties desire to enter in an agreement for the Contractor to perform the Project for City per all the terms and conditions more particularly set out herein below;

NOW, THEREFORE, for and in consideration of the foregoing, and of other good and valuable consideration, the adequacy of which is hereby acknowledged, the parties hereto agree as follows:

(1) **SCOPE OF SERVICES:**

- a. Contractor hereby agrees to perform construction of project **BOBBY ALFORD PAVILION PROJECT** as outlined in the Project Manual, incorporated into this Agreement as **ATTACHMENT "A"** and hereinafter referred to as "Work";
- b. Contractor further agrees to commence and complete any and all extra work in connection therewith, under the terms as stated in the **General and Supplementary Conditions including CDBG Contract Special Provisions of the Contract**; and at his/hers (it's or their) own proper cost and expense to furnish all the materials, supplies, machinery, equipment, tools, superintendents, labor, insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the Proposal and the General Conditions, Supplemental General Conditions, and Special Provisions of the Contract, the plans, including all maps, plats, blueprints, and other drawings and printed or written explanatory matters thereof, the specifications and contract documents therefore as prepared by the ARCHITECT, and as enumerated in Paragraph 1 of the General Conditions, all of which are made a part hereof and collectively evidence and constitute the Contract.
- c. City may, from time to time require changes in the Work of the Contractor to be performed hereunder. Such changes, which are mutually agreed upon by and between City and the Contractor, shall be incorporated by written amendment to this Agreement.

(2) **COMPENSATION:**

- a. City agrees to pay Contractor a sum not to exceed _____ dollars (\$_____.____) in accordance with the Bid Cost Table, incorporated into this Agreement and hereinafter referred to as "Compensation";
- b. In the event funds are not appropriated or become non-appropriated for an included fiscal year by City, it is agreed by the parties that this Agreement will become null and void and the City's obligations cannot extend beyond the date of non-appropriation.

(3) **PERIOD OF SERVICES:**

- a. the Work to be performed hereunder by the Contractor shall begin upon the date outlined to the City's Notice to Proceed letter to the Contractor, incorporated into this Agreement as **ATTACHMENT "B"** and hereinafter referred to as "NTP"
- b. The Work shall be completed in accordance with the Schedule, incorporated into this Agreement as **ATTACHMENT "C"** and hereinafter referred to as "Schedule".
- c. Modifications to the Schedule may be required. Such modifications, which are mutually agreed upon by and between City and the Contractor shall be incorporated by written amendment to this Agreement.

(4) **FORCE MAJEURE:**

- a. Force majeure includes acts of God, acts of other branches of government in either their sovereign or contractual capacities, or any similar cause beyond the reasonable control of the parties.
- b. Any delays in or failure of performance by either party that are caused by a Force Majeure shall not constitute breach of this Agreement.
- c. In the event that any event of force majeure, as herein defined occurs, both parties shall be entitled to a reasonable extension of time for performance of its WORK.

(5) **NOTICES:**

- a. Any notices, bills, invoices, or reports required by this Agreement shall be sufficient if sent by the parties in the United States mail, postage paid, to the addresses of the Project Manager (See Section 00015)

(6) **RECORDS AND INSPECTIONS:**

- a. Contractor shall maintain full and accurate records with respect to all matters covered under this Agreement for a period of one year after the completion of the project.
- b. City shall have free access at all proper times to such records, and the right to examine and audit the same and to make transcripts there from, and to inspect all program data, documents, proceedings, and activities.

(7) **COMPLETENESS OF AGREEMENT:**

- a. This Agreement and any additional or supplementary document or documents incorporated herein by specific reference contain all the terms and conditions agreed upon by the parties hereto, and no other agreements, oral or otherwise, regarding the subject matter of this Agreement or any part thereof shall have any validity or bind any of the parties hereto
- b. This Agreement is entered into with full understanding and awareness of such requirement.
- c. City shall be allowed to rely upon the representations of Contractor as set out in the Proposal.
- d. With the exception of the foregoing, this Agreement constitutes the entire agreement between the parties hereto and may not be modified or amended except in writing signed by both parties hereto.

(8) **CONFLICTS:**

- a. In the case of any conflict between the terms and conditions of this Agreement and the terms of any other agreement between the parties hereto, the terms of this Agreement shall control
- b. If there is a conflict between the City's Proposal and this Agreement, then this Agreement shall control.
- c. If there is a conflict between the City's Request for Bids and the Contractor's Proposal, the City's Request for Bids shall control.
- d. Both parties agree that all conflicts arising under this Agreement that cannot be settled between the parties shall be resolved in the Georgetown County Court of Common Pleas (Non-Jury)

(9) **SEVERABILITY:**

- a. If any part or provision of this Agreement is held invalid or unenforceable under applicable law, such invalidity or unenforceability shall not in any way affect the validity or enforceability of the remaining parts and provisions of this Agreement.

(10) **NONWAIVER:**

- a. The waiver by City or Contractor of a breach of this Agreement shall not operate as a waiver of any subsequent breach, and no delay in acting with regard to any breach of this Agreement shall be construed to be a waiver of the breach.
- b. In no event shall the making of any payment by City to the Contractor constitute or be construed as a waiver by City of any breach of covenant, or any default which may exist on the part of the Contractor.
- c. The making of any such payment by City while any such breach or default shall exist in no way impairs or prejudices any right or remedy available to City in respect to such breach or default.

(11) **GOVERNING LAW:**

- a. This Agreement and the rights, obligations and remedies of the parties hereto, shall in all respects be governed by and construed in accordance with the laws of the State of South Carolina.

(12) **RESPONSIBILITY:**

- a. Each party shall be responsible for its own acts as provided under the law of South Carolina and will be responsible for all damages, costs, fees and expenses which arise out of the performance of this Agreement which are due to that party's own negligence, tortious acts and other unlawful conduct and the negligence, tortious action and other unlawful conduct of its respective agents, officers and employees.

(13) **FREEDOM OF INFORMATION ACT (FOIA)**

- a. The parties acknowledge that all documents are subject to release under the South Carolina Freedom of Information Act (FOIA) and will be released to the public unless exempt from disclosure under the FOIA.
- b. If the Contractor contends a document is exempt from disclosure under the FOIA, it shall mark any such documents plainly, and seek protection from disclosure by filing an

appropriate action in Circuit Court and shall bear the cost of the action and any monetary or attorney's fees awarded to the person or entity making the FOIA request.

- c. If the Contractor objects to release and litigation is commenced against the City under the FOIA, the City agrees to promptly notify the Contractor, who shall move in intervene as a party. The Contractor agrees to hold the City harmless from and indemnify for all costs (including plaintiff's attorney's fees if awarded by the Court) incurred by the City in defending the lawsuit and the funds necessary to satisfy any judgment and all costs on appeal, if any.

(14) **THIRD PARTY OBLIGATIONS:**

- a. Neither party shall be obligated or liable hereunder to any party other than the second party to this Agreement.

(15) **RESTRICTIONS ON LOBBYING:**

- a. Contractor shall comply with all requirements of Section 1352, Title 31 of the U.S. Code, which prohibits all recipients of federal funds from using appropriated monies for lobbying activities.

(16) **SUCCESSORS AND ASSIGNS:**

- a. The rights and obligations herein shall inure to and be binding upon the successors and assigns of the parties hereto.

(17) **SPECIAL WARRANTY:**

The Contractor warrants that nothing of monetary value has been given, promised or implied as remuneration or inducement to enter into this Contract. The Contractor further declares that no improper personal, political or social activities have been used or attempted in an effort to influence the outcome of the competition, discussion or negotiation leading to the award of this Contract. Any such activity by the Contractor shall make this Contract null and void.

IN WITNESS WHEREOF, City and the Contractor have executed this agreement as of the date first written above.

CITY OF GEORGETOWN, SOUTH CAROLINA
(OWNER)

(SIGNATURE)

By: _____

(SEAL)

Title: _____

(CONTRACTOR)

(SIGNATURE)

By: _____

(CORPORATE SEAL)

Title: _____

Attest:

It's Secretary

Witness

(END OF SECTION)

CONTRACT
005000-7

**SECTION 005000.1
PERFORMANCE BOND**

KNOW ALL MEN BY THESE PRESENTS THAT

(NAME OF CONTRACTOR)

(ADDRESS OF CONTRACTOR)

A Corporation Partnership, hereinafter called Principal, and

(NAME OF SURETY)

(ADDRESS OF SURETY)

Hereinafter called Surety, are held and firmly bound unto

THE CITY OF GEORGETOWN, SOUTH CAROLINA
(NAME OF OWNER)

1134 NORTH FRASER STREET, GEORGETOWN, SC 29440
(ADDRESS OF OWNER)

hereinafter called Owner, in the penal sum of (100% of total bid)
_____ Dollars _____ Cents (\$ _____),
in lawful money of the United States, for the payment of which sum well and truly to be made,
we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally,
firmly by these present.

THE CONDITION OF THIS OBLIGATION is such that whereas the Principal entered into a certain Contract with the Owner dated the _____ day of _____, 20____, a copy of which is hereto attached and made part hereof for **BOBBY ALFORD PAVILION PROJECT**.

NOW, THEREFORE, if the Principal shall well, truly, and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term thereof, and any extensions thereof which may be granted by the Owner, with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under such contract and fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense which the Owner may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extensions of time, alteration, or addition to the terms of the Contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the specifications.

PROVIDED FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in three (3) counterparts, each one of which shall be deemed an original, and this the _____ day of _____, 20____.

Signed, sealed and delivered in the presence of:

(PRINCIPAL - CONTRACTOR)

(SIGNATURE)

As to Principal

By: _____

Title: _____

(SURETY)

(SIGNATURE)

As to Surety

By: _____

ATTORNEY-IN-FACT
(Power of Attorney to be attached)

By: _____
(RESIDENT AGENT)

(RESIDENT AGENT COMPANY NAME)

(RESIDENT AGENT COMPANY ADDRESS)

(RESIDENT AGENT ADDRESS)

NOTES:

1. Date of Bond must not be prior to date of Contract.
2. If Contractor is a Partnership, all partners should execute Bond.
3. Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

(END OF SECTION)

**SECTION 005010.1
PAYMENT BOND**

KNOW ALL MEN BY THESE PRESENTS THAT

(NAME OF CONTRACTOR)

(ADDRESS OF CONTRACTOR)

A Corporation Partnership, hereinafter called Principal, and

(NAME OF SURETY)

(ADDRESS OF SURETY)

Hereinafter called Surety, are held and firmly bound unto

THE CITY OF GEORGETOWN, SOUTH CAROLINA
(NAME OF OWNER)

1134 NORTH FRASER STREET, GEORGETOWN, SC 29440
(ADDRESS OF OWNER)

hereinafter called Owner, in the penal sum of (100% of total bid)
_____ Dollars _____ Cents (\$ _____),
in lawful money of the United States, for the payment of which sum well and truly to be made,
we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally,
firmly by these present.

THE CONDITION OF THIS OBLIGATION is such that whereas the Principal entered into a
certain Contract with the Owner dated the _____ day of _____, 20____, a
copy of which is hereto attached and made part hereof for **BOBBY ALFORD PAVILION
PROJECT**.

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms,
subcontractors, and corporations furnishing materials for or performing labor in the prosecution of
the work provided for in such contract, and any authorized extension of modification thereof,
including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on
machinery, equipment and tools, consumed or used in connection with the construction of such
work, and all insurance premiums on said work, and for all labor, performed in such work whether
by subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force

PAYMENT BOND
005010.1-1

and effect.

PROVIDED FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extensions of time, alteration, or addition to the terms of the Contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the specifications.

PROVIDED FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in three (3) counterparts, each one of which shall be deemed an original, this _____ day of _____, 20____.

Signed, sealed and delivered in the presence of:

(PRINCIPAL - CONTRACTOR)

(SIGNATURE)

As to Principal

By: _____

Title: _____

(SURETY)

(SIGNATURE)

As to Surety

By: _____

ATTORNEY-IN-FACT
(Power of Attorney to be attached)

By: _____
(RESIDENT AGENT)

(RESIDENT AGENT COMPANY NAME)

(RESIDENT AGENT COMPANY ADDRESS)

(RESIDENT AGENT ADDRESS)

NOTES:

1. Date of Bond must not be prior to date of Contract.
2. If Contractor is a Partnership, all partners should execute Bond.
3. Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

(END OF SECTION)

**SECTION 005020.3
NOTICE OF INTENT TO AWARD**

OWNER: City of Georgetown, SC

PROJECT: **BOBBY ALFORD PAVILION PROJECT**

PROJECT NO. : **1222**

CDBG Covid Grant No.: CV1-019

TO ALL BIDDERS

This is to notify all Bidders that it is the intent of the Owner to award a contract as follows:

NAME OF BIDDER: _____

DATE BIDS WERE RECEIVED: _____

AMOUNT OF BASE BID: \$ _____

ALTERNATE(S) ACCEPTED: \$ _____

TOTAL AMOUNT WITH ALTERNATE(S): \$ _____

The Owner has determined that the above named Bidder is responsible and has submitted the winning bid. The Owner may enter into a contract with this Bidder subject to the contract review and approval of City Council and the grant agency, as applicable.

(Print or Type Name)

(Award Authority Title)

(Signature)

(Date Posted)

END OF SECTION)

**SECTION 005020.4
NOTICE OF AWARD**

TO: _____

PROJECT DESCRIPTION: **BOBBY ALFORD PAVILION PROJECT**

PROJECT NO. : **1222**

CDBG Covid Grant No.: CV1-019

The City of Georgetown (Owner) has considered the bid dated _____, 20____, submitted by you for the above described work in response to its Advertisement for Bids and its Information for Bidders.

You are hereby notified that your bid has been accepted for items in the amount of \$_____.

You are required by the Information for Bidders to execute the Agreement and furnish the required: City's business license, Contractor's W-9 from, payment and performance bonds, and certificates of insurance within ten (10) calendar days from the date of this notice to you. If you fail to execute said agreement and to furnish said bonds within ten (10) days from the date of this notice, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your bid as abandoned and as a forfeiture of your bid bond. The Owner will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Award to the Owner.

Dated this _____ day of _____, 20_____.

CITY OF GEORGETOWN, SOUTH CAROLINA

By: _____

Title: _____

Acceptance of Notice

Receipt of the above Notice of Award is hereby acknowledged this _____ day of _____, 20_____.

(Signature)

By: _____

Title: _____

(END OF SECTION)

SECTION 006000
EMPLOYMENT ELIGIBILITY VERIFICATION REQUIREMENT

- A. Contractor is required to comply with all applicable State and Federal employment eligibility verification requirements including but not limited to the following:
1. By signing its bid or proposal, Contractor certifies that it will comply with the applicable requirements of Title 41, Chapter 8 of the South Carolina Code of Laws and agrees to provide to the City of Georgetown upon request any documentation required to establish either: (a) that Title 41, Chapter 8 is inapplicable both to Contractor and its subcontractors or sub-subcontractors are in compliance with Title 41, Chapter 8. Pursuant to Section 41-8-70, "In addition to other penalties provided by law, a person who knowingly makes or files any false, fictitious, or fraudulent document, statement, or report pursuant to this chapter is guilty of a felony, and upon conviction, must be fined within the discretion of the court or imprisoned for not more than five years, or both. "Contractor agrees to include in any contracts with its subcontractors language requiring its subcontractors to (a) comply with the applicable requirement of Title 41, Chapter 8, and (b) include in their contracts with the sub-subcontractors language requiring the sub-subcontractors to comply with the applicable requirements of Title 41, Chapter 8.
- B. Contractor is required to complete and submit the attached affidavit along with the executed contract documents.
- C. E-Verify.
1. In addition to completing and maintaining the federal employment eligibility verification form (Form I-9), Contractor must, within three (3) business days after employing a new employee, verify the employee's work authorization through the E-Verify federal work authorization program administered by the U.S. Department of Homeland Security. Employers may no longer confirm a new employee's employment authorization with a driver's license or state identification card.
 2. Contractor shall enroll in E-Verify at www.dhs.gov/e-verify.

CONTRACTOR AFFIDAVIT

EMPLOYMENT VERIFICATION

006000-1

SOUTH CAROLINA ILLEGAL IMMIGRATION REFORM ACT (Amended)

In accordance with the requirements of the South Carolina Illegal Immigration Reform Act, Contractor hereby certifies that it is currently in compliance with the requirements of Title 40, Chapter 8 of the S.C. Code Annotated and will remain in compliance with such requirements throughout the term of its contract with the Owner.

The Contractor hereby acknowledges that in order to comply with requirements of S.C. Code Annotated Section 41-8-20:

- (A) All private employers in South Carolina shall be imputed a South Carolina employment license, which permits a private employer to employ a person in this State. A private employer may not employ a person unless the private employer's South Carolina employment license and any other applicable licenses as defined in Section 41-8-10 are in effect and are not suspended or revoked. A private employer's employment license shall remain in effect provided the private employer complies with the provisions of this chapter.
- (B) All private employers who are required by federal law to complete and maintain federal employment eligibility verification forms or documents must register and participate in the E-Verify federal work authorization program, or its successor, to verify the work authorization of every new employee within three business days after employing a new employee. A private employer who does not comply with the requirements of this subsection violates the private employer's licenses.
- (C) The South Carolina Department of Employment and Workforce shall provide private employers with technical advice and electronic access to the E-Verify federal work authorization program's website for the sole purpose of registering and participating in the program.
- (D) Private employers shall employ provisionally a new employee until the new employee's work authorization has been verified pursuant to this section. A private employer shall submit a new employee's name and information for verification even if the new employee's employment is terminated less than three business days after becoming employed. If a new employee's work authorization is not verified by the federal work authorization program, a private employer must not employ, continue to employ, or reemploy the new employee.
- (E) To assist private employers in understanding the requirements of this chapter, the director shall send written notice of the requirements of this section to all South Carolina employers, and shall publish the information contained in the notice on its website. Nothing in this section shall create a legal requirement that any private

employer receive actual notice of the requirements of this chapter through written notice from the director, nor create any legal defense for failure to receive notice.

- (F) If a private employer is a contractor, the private employer shall maintain the contact phone numbers of all subcontractors and sub-subcontractors performing services for the private employer. The private employer shall provide the contact phone numbers or a contact phone number, as applicable, to the director pursuant to an audit or investigation within seventy-two hours of the director's request.

The Contractor agrees to provide to the Owner upon request any documentation required to establish the applicability of the South Carolina Illegal Immigration Reform Act (Amended) to the contractor, subcontractor or sub-subcontractor. The Contractor further agrees that it will upon request provide the Owner with any documentation required to establish that the Contractor and any subcontractors or sub-subcontractors are in compliance with the requirements of Title 41, Chapter 8 of the S.C. Code Annotated.

Date: _____

(Signature)

By: _____

Title: _____

(END OF SECTION)

**SECTION 006060
NOTICE TO PROCEED**

TO:

OWNER: City of Georgetown, South Carolina

PROJECT: BOBBY ALFORD PAVILION PROJECT

PROJECT NUMBER: 1222 (CDBG Covid Grant no. CV1-019)

DATE:

This is your Notice to Proceed with the Work, on the above-mentioned Project, in accordance with The Agreement dated _____, 20____. You are authorized to commence Work on _____ 20____, and you are required to complete the Work within **One-Hundred and Eighty (180)** consecutive calendar days thereafter.

The date of final completion for all Work is therefore: _____ 20____.

Kindly return this Notice to Proceed to the Owner in acknowledgement.

CITY OF GEORGETOWN, SOUTH CAROLINA

(Signature)

By: _____

Title: _____

Acceptance of Notice

Receipt of the above Notice to Proceed is hereby acknowledged this the _____ day of _____, 20____.

(Signature)

By: _____

Title: _____

(END OF SECTION)

**SECTION 006100
APPLICATION FOR PAYMENT**

TO: CITY OF GEORGETOWN, SC

PAY REQUEST NO.: _____

FROM: _____

Distribution to:

VIA: _____

_____ Owner

PROJECT: _____

_____ ARCHITECT

_____ Contractor

PROJECT NO.: _____

DATE: _____

CONTRACT FOR: _____

CONTRACTOR'S APPLICATION FOR PAYMENT

CHANGE ORDER SUMMARY			
Change Orders approved in previous months by Owner		ADDITIONS	DEDUCTIONS
TOTALS:			
Approved this Month			
Number	Date Approved		
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 of Payment were issued and payments received from the Owner, and that current payment shown herein are now due.

CONTRACTOR:

By: _____

Date: _____

Application for Payment, as indicated below, in connection with the Contract.
(Continuation Sheet is attached)

1 – ORIGINAL CONTRACT SUM	\$
2 – Net changes by CHANGE ORDERS	\$
3 – CONTRACT SUM TO DATE (Line 1 + Line 2)	\$
4 – TOTAL COMPLETED AND STORED TO DATE ("G" on Continuation Sheet)	\$
5 – RETAINAGE ("T" on Continuation Sheet)	\$
6 – TOTAL EARNED LESS RETAINAGE (Line 4 – Line 5)	\$
7 – LESS PREVIOUS CERTIFICATES FOR PAYMENT	\$
8 – CURRENT PAYMENT DUE	\$
9 – BALANCE TO FINISH, PLUS RETAINAGE (Line 3 – Line 5)	\$

State of: _____ County of: _____
Subscribed and sworn to before me this _____ day of _____ 20__.
Notary Public: _____ My Commission Expires: _____

CONTRACTOR'S APPLICATION FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising the above 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. Some defects or problems with construction items may not be determined until final testing and operation of the system is performed. The ARCHITECT cannot be held liable for approval for partial payments for the installation of these items from which the evidence of defects or problems were not determined until after the request for payment was approved.

AMOUNT CERTIFIED \$ _____
(Attach explanation if amount certified differs from amount applied for.)

ARCHITECT:

By: _____ Date: _____

OWNER:

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 not without prejudice to any rights of the Owner or Contractor under this Contract.

Note: The use of AIA G702 and G703 forms is also allowed.

**SECTION 006200
CONTRACTOR'S AFFIDAVIT**

The State of _____ Date: _____

The County of _____ The City of _____

_____ of _____
(Officer's Name) (Officer's Title) (Contractor's Name)

being duly sworn, deposed and says that _____ has furnished
(Contractor's Name)

labor and materials entering into the _____
(Project Name)

dated _____ with the City of Georgetown, South Carolina.

_____ states further that this officer has full knowledge of all
(Contractor's Name)

obligations for such labor and materials which have entered into and become part of that certain project known and designated above, and that this officer further deposes and says that all debts and other obligations for such labor and materials have been fully and completely paid for in good and lawful money of the United States of America and that there are no suits for damages against them proceeding, prospective and/or that there are no suits for damages against them proceeding, prospective, or otherwise, in consequence of their operations on the above said project.

The said _____ will hold the Owner, the City of Georgetown
(Contractor's Name)

South Carolina, blameless of any and all mechanic's liens that may be hereafter entered or filed for record, so as to constitute charge against said premises for work or labor done or materials furnished by them.

IN WITNESS HEREOF, this officer has heretofore put his hand and seal:

(Officer's Name)

I, _____, Notary Public in and for the above named County and State do hereby certify that _____ personally know to me to be the

(Officer's Name)

affiant in the foregoing Affidavit, personally appeared before me this day and, having been duly sworn, deposed and says the facts set forth in the above Affidavit are true and correct.

WITNESS my hand and seal this _____ day of _____ 20_____.

Notary Public for the State of _____

My Commission Expires: _____

SECTION 006300
CONTRACT CHANGE ORDER

DATE: _____
CHANGE ORDER #: _____

PROJECT: _____
PROJECT #: _____

Description of and Reason for Change: _____

Itemization of Proposed Change and Basis for Payment

Original Contract Price \$ _____
Previous Change Orders \$ _____
This Change, (An Addition) (A Deduction) of \$ _____
Proposed Revised Contract Price \$ _____

Additional funds shall be provided in the following manner: _____

Extension of Contract Time Required: _____ days.

Revised Contract Completion Date: _____

Accepted by the Contractor:

By: _____ Date: _____

Recommended by _____:

By: _____ Date: _____

Approved by the Owner:

By: _____ Date: _____

**SECTION 007000
GENERAL CONDITIONS**

1. CONTRACT AND CONTRACT DOCUMENTS. The drawings (plans), specifications, CDBG Special Provisions, and addenda, hereinafter enumerated in Section 00005, shall form part of this contract and the provisions thereof shall be as binding upon the parties hereto as if they were herein fully set forth. The table of contents titles, heading, running headlines, and marginal notes contained herein and in said documents are solely to facilitate reference to various provisions of the contract documents and in no way affect, limit, or cast light on the interpretations of the provisions to which they refer.

<u>Contents</u>	
1. Contract and Contract Documents	27. Acceptance of Final Payment as Release
2. Definitions	
3. Additional Instructions and Detail Drawings	28. Payments by Contractor
4. Shop Drawings and Samples	29. Insurance
5. Materials, Services, and Facilities	30. Payment and Performance Bonds
6. Contractor's Title to Materials	31. Assignments
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8. "Or Equal" Clause	33. Separate Contracts
9. Patents	34. Subcontracting
10. Surveys, Laws, and Regulations	35. Architect's Authority
11. Contractor's Obligations	36. Stated Allowances
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13. Protection of Work and Property, Emergency	38. Quantities of Estimate
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17. Changes in Work	41. Notice and Service Thereof
18. Extras	42. Required Provisions Deemed Inserted
19. Time for Completion and Liquidated Damages	43. Protection of Lives and Health
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21. Subsurface Conditions Found Different	45. Prohibited Interests
22. Claims for Extra Cost	46. Conflicting Conditions
23. Right of Owner to Terminate Contract	47. Indemnification
24. Construction Schedule and Periodic Payments	
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26. Acceptance of Work and Final Payment as Release	

2. DEFINITIONS. The following terms as used in this contract are respectively defined as follows:

Wherever in the specifications or upon the drawings the words “directed”, “required”, “permitted”, “ordered”, “designated”, “prescribed”, or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation or prescription of the City is intended; and similarly, the words “approved”, “acceptable”, “satisfactory”, or words of like import shall mean approved by, or acceptable to, or satisfactory to the City, unless otherwise expressly stated.

- A. Contractor. A person, firm, or corporation with whom the contract is made by the Owner.
- B. Subcontractor. A person, firm, or corporation supplying labor and materials, or only labor, for work at the site of the project for and under separate contract or agreement with the Contractor.
- C. Work on or at the Project. Work to be performed at the location of the project, including the transportation of materials and supplies to or from the location of the project by employees of the Contractor and any Subcontractor.
3. ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS. The Contractor will be furnished additional instructions and detail drawings as necessary to carry out the work included in the Contract. The additional drawings and instructions thus supplied to the Contractor will coordinate with the Contract Documents and will be so prepared that they can be reasonably interpreted as part thereof. The Contractor shall carry on the work in accordance with the additional detail drawings and instructions. The Contractor and ARCHITECT will prepare jointly:
- A. A schedule fixing the dates at which special detail drawings will be required; such drawings, if any, to be furnished by the ARCHITECT in accordance with said schedule; and
- B. A schedule fixing the respective dates for the submission of shop drawings, the beginning of manufacture, testing, and installation of materials, supplies, and equipment, and the completion of the various parts of the work; each such schedule to be subject to change from time to time in accordance with the progress of the work.
4. SHOP DRAWINGS AND SAMPLES. Submit to the ARCHITECT for approval, in accordance with the requirement of Section 01340
- A. Samples. Contractor shall also submit to the ARCHITECT for approval, all samples required by Section 01340. All samples will have been checked by and

stamped with the approval of the Contractor, identified clearly as to material, manufacturer, any pertinent catalog numbers and the use for which intended.

- B. Deviations. At the time of each submission, Contractor shall in writing call the A's attention to any deviations that the Shop Drawings or Samples may have from the requirements of the Contract Document.
 - C. A's Review. ARCHITECT will review and approve with reasonable promptness Shop Drawings and Samples, but his review and approval shall be only for conformance with the design concept of the project and for compliance with the information given in the Contract Documents. The approval of a separate item as such will not indicate approval of the assembly in which the item functions. Contractor shall make any corrections required by ARCHITECT and shall return the required number of corrected copies of Shop Drawings and resubmit new samples until approved. Contractor shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections called for by ARCHITECT on previous submissions. Contractor's stamp of approval on any Shop Drawing or sample shall constitute a representation to Owner and ARCHITECT that Contractor has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data or he assumes full responsibility for doing so, and that he has reviewed or coordinated each Shop Drawing or sample with the requirements of the work and Contract Documents
 - D. Contractor's Records. Where a Shop Drawing or sample submission is required by the Specifications, no related work shall be commenced until the submission has been approved by the ARCHITECT. A copy of each approved Shop Drawing and each approved sample shall be kept in good order by Contractor at the site and shall be available to ARCHITECT.
 - E. Contractor's Responsibility. ARCHITECT's approval of Shop Drawings or sample shall not relieve Contractor from his responsibility for any deviations from the requirements of the Contract Documents unless Contractor has in writing called the ARCHITECT's attention to such deviation at the time of submission and ARCHITECT has given written approval to the specific deviation, nor shall any approval by ARCHITECT relieve Contractor from Responsibility for errors or omissions in the Shop Drawings.
5. MATERIALS, SERVICES, AND FACILITIES shall be furnished by the Contractor.
- A. It is understood that except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, gas, lights, power, transportation, superintendent, taxes, insurance, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute, complete, and deliver the work within the specified time.

- B. Any work necessary to be performed after regular working hours, on Sundays, or legal holidays, shall be performed without additional expense to the Owner.
6. CONTRACTOR'S TITLE TO MATERIALS. No materials or supplies for the work shall be purchased by the Contractor or by any subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. The Contractor warrants that he has good title to all materials and supplies used by him in the work, free from all liens, claims, or encumbrances.
7. INSPECTION AND TESTING OF MATERIALS. Unless otherwise specifically provided for in the specifications, the inspection and testing of material and finished articles to be incorporated in the work at the site shall be made by bureaus, laboratories, or agencies approved by Owner. The cost of such inspection and testing shall be paid by the Contractor.
- A. Certification by Contractor. Where the detailed specifications call for certified copies of mill or shop tests to establish conformance of certain materials with the specifications, it shall be the responsibility of the Contractor to assure delivery of such certifications to the Owner. No materials or finished articles shall be incorporated in the work until such materials and finished articles have passed the required tests. The Contractor shall promptly segregate and remove rejected material and finished articles from the site of the work.
8. "OR EQUAL" CLAUSE. The phrase "or equal" shall be construed to mean that material or equipment will be acceptable only when, in the judgment of the ARCHITECT, they are composed of parts of equal quality, equal workmanship and finish, designed and constructed to perform or accomplish the desired result as efficiently as the indicated brand, pattern, grade, class, make, or model. Written approval will be obtained from the ARCHITECT prior to installation.
9. PATENTS. The Contractor shall hold and save the Owner and its officers, agents, servants, and employees harmless from liability of any nature or kind, including cost and expenses for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the contract, including its use by the Owner, unless otherwise specifically stipulated in the Contract Documents. If the Contractor uses any design, device, or material covered by letter, patent, or copyright, he shall provide for such use by suitable agreement with the Owner of such patented or copyrighted design, device, or material. It is mutually agreed and understood that, with exception, the contract prices shall include all royalties or costs arising from the use of such design, device, or materials, in any way involved in the work. The Contractor and/or his sureties shall indemnify and save harmless the Owner of the project from any and all claims for infringements by reason of the use of such patented or copyrighted design, device, or materials or any trademark or copyright in connection with work agreed to be performed under this contract, and shall indemnify the Owner for any cost, expense, or damage which it may be obligated to pay by reason of such infringement at any time during the prosecution of the work or after completion of the work.

10. SURVEYS, LAWS, AND REGULATIONS. The Contractor shall comply with the following:
- A. Construction staking shall be the responsibility of the Contractor.
 - B. Laws and Regulations. The Contractor shall keep himself fully informed of all laws, ordinances, and regulations of the State, City, and County in any manner affecting those engaged or employed in the work, or the materials used in the work, or in any way affecting the conduct of the work, and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over same. If any discrepancy or inconsistency should be discovered in this contract, or in the drawings or specifications herein referred to, in relation to any such law, ordinance, regulation, order, or decree, he shall forthwith report the same in writing to the Owner. He shall, at all times, himself observe and comply with all such existing and future laws, ordinance, and regulations (to the extent that such requirements do not conflict with Federal laws or regulations) and shall protect and indemnify the Owner and its agents against any claims or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by himself or by his employees.
11. CONTRACTOR'S OBLIGATIONS. The Contractor shall, in good workman-like manner do and perform all work and furnish all supplies and materials, machinery, equipment, facilities, and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all the work required by this contract, within the time herein specified, in accordance with provisions of this contract and said specifications, and in accordance with the plans and drawings covered by this contract and any and all supplemental plans and drawings and in accordance with the directions of the ARCHITECT as given from time to time during the progress of the work. He shall furnish, erect, maintain, and remove such construction plant and such temporary works as may be required. The Contractor shall observe, comply with, and be subject to all terms, conditions, requirements, and limitation of the contract and specifications, and shall do, carry on, and complete the entire work to the satisfaction of the ARCHITECT and the Owner.
12. WEATHER CONDITIONS. In the event of temporary suspension of work or during inclement weather, or whenever the ARCHITECT shall direct, the Contractor will, and will cause his subcontractors to, protect carefully his and their work and materials against damage or injury from the weather. If, in the opinion of the ARCHITECT, any work or materials shall have been damaged or injured by reason of failure on the part of the Contractor or any of his Subcontractors to so protect its work, such materials shall be removed and replaced at the expense of the Contractor.
13. PROTECTION OF WORK AND PROPERTY, EMERGENCY. The Contractor shall at all times safely guard the Owner's property from injury or loss in connection with this contract. He shall at all times safely guard and protect his own work and that of adjacent property from damage. The Contractor shall replace or make good any such damage,

loss, or injury. In case of emergency which threatens loss or injury of property and/or safety of life, the Contractor will be allowed to act, without previous instructions from the ARCHITECT, in a diligent manner. He shall notify the ARCHITECT immediately thereafter. Any claim for compensation by the Contractor due to such extra work shall be promptly submitted to the ARCHITECT for approval. The amount of reimbursement claimed by the Contractor on account of any emergency action shall be determined in the manner provided in paragraph entitled "Changes in Work" of these specifications.

14. INTERPRETATIONS. If any person contemplating submitting a bid for the proposed contract is in doubt as to the true meaning of any part of these proposed contract documents, he may submit to the ARCHITECT a written request for an interpretation thereof. The person submitting the request will be responsible for its prompt and actual delivery. Any interpretation of such documents will be made only by addendum duly issued, and a copy of such addendum will be mailed or delivered to each person receiving a set of such documents. The Owner will not be responsible for any other explanation or interpretation of such documents which anyone presumes to make on behalf of the Owner before expiration of the ultimate time set for the receipt of bids.
15. REPORTS, RECORDS, AND DATA. The Contractor shall submit to the Owner such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records, and other data as the Owner may request concerning work performed or to be performed under this contract.
16. SUPERINTENDENCE BY CONTRACTOR. The Contractor shall employ only competent and skilled men on the work. The Contractor shall have competent Superintendent or Foreman present at all times when the work is in progress, who shall have full authority to act for the Contractor. It is understood that such representative shall be acceptable to the ARCHITECT and shall be one who can be continued in that capacity for the particular job involved unless he ceases to be on the Contractor's payroll. The Contractor shall, upon demand from the ARCHITECT, immediately remove any superintendent, foreman, or workman whom the ARCHITECT may consider incompetent or undesirable.
17. CHANGES IN WORK. No changes in the work covered by the approved contract documents shall be made without having prior written approval of the Owner. Charges or credits for the work covered by the approved change shall be determined by one or more, or a combination of, the following methods:

- A. Unit bid prices previously approved.
- B. An agreed upon lump sum.
- C. The actual cost of:
 1. Labor, including social security and unemployment contributions.
 2. Materials.
 3. The ownership or rental cost of construction equipment
 4. Insurance and Bond.

To the cost under (C) there shall be added a fixed fee to be agreed upon but not to exceed 10 percent (10%) of the estimated cost of the work. The fee shall be compensation to cover the cost of office manager, field supervision, insurance, small

tools, overhead, profit, and any other general expenses. The allowable overhead and profit percentage of the Contractor is 5% for the work performed by a subcontractor.

18. EXTRAS. Without invalidating the contract, the Owner may order extra work or make changes by altering, adding to, or deducting from the work, the contract sum being adjusted accordingly, and the consent of the surety being first obtained where necessary or desirable. All the work of the kind bid upon shall be paid for at the price stipulated in the proposal, and no claims for any extra work or materials shall be allowed unless the work is ordered in writing by the Owner, or the ARCHITECT acting officially for the Owner, and the price is stated in such order. Extra work shall be performed only upon the execution of authorized change orders as set forth in the preceding paragraph.
19. TIME FOR COMPLETION AND LIQUIDATED DAMAGES. It is hereby understood and mutually agreed by and between the Contractor and the Owner that the date of beginning and the time for completion as specified in the contract of the work to be done hereunder are essential conditions of this contract, and it is further mutually understood and agreed that the work embraced in this contract shall be commenced on a date to be specified in the Notice to Proceed.
- A. To any preference, priority, or allocation order duly issued by the Government.
 - B. To unforeseeable cause beyond the control and without the fault or negligence of the Contractor including, but not restricted to, acts of the public enemy, acts of the Owner, acts of another contractor in the performance of a contract with the Owner; fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, hurricanes, and tornadoes.
 - C. To any delays of subcontractors or suppliers occasioned by any of the causes specified in subsections (A) and (B) of this article

Provided, further that the Contractor shall, within seven (7) days from the beginning of such delay, unless the Owner shall grant a further period of time prior to the date of final settlement of the contract, notify the Owner in writing of the causes of delay, who shall ascertain the facts and extent of delay and notify the Contractor with a reasonable time of its decision in the matter, and grant such extension of time as the Owner shall deem suitable and just.

Normal weather conditions for the project area are taken into consideration in the time for completion of the contract; therefore, no extension of time will be extended for normal weather conditions, with the exception of hurricanes and tornadoes.

20. CORRECTION OF WORK. All work, all materials, whether incorporated in the work or not, all processes of manufacturer, and all methods of construction, shall be at all times and places subject to the inspection of the ARCHITECT, who shall be the final judge of the quality and suitability of the work, materials, processes of manufacture, and methods of construction of the purposes for which they are used. Should they fail to meet his approval, they shall be forthwith reconstructed, made good, replaced and/or corrected, as the case may be, by the Contractor at his own expense. Rejected material shall immediately be removed from the site. If, in the opinion of the ARCHITECT, it is undesirable to replace any defective or damaged materials or to reconstruct or correct any

portion of the work injured or not performed in accordance with the contract documents, the compensation to be paid to the Contractor hereunder shall be reduced by such amount as, in the judgment of the ARCHITECT, shall be equitable.

21. SUBSURFACE CONDITIONS FOUND DIFFERENT. Should the Contractor encounter subsurface and/or latent conditions at the site materially differing from those shown on the plans or indicated in the specifications, he shall immediately give notice to the ARCHITECT of such conditions before they are disturbed. The ARCHITECT will thereupon promptly investigate the conditions, and if he finds that they materially differ from those shown on the plans or indicated in the specifications, he will, in a timely manner, make such changes in the plans and/or specifications as he may find necessary; any increase or decrease of cost resulting from such changes to be adjusted in the manner provided in paragraph 17 of these specifications.
 - A. Where no specific subsurface conditions are indicated or specified, no increase in cost will be considered in regards to subsurface conditions encountered
22. CLAIMS FOR EXTRA COSTS. No claim for extra work or cost shall be allowed unless the same was done in pursuance of a written order of the ARCHITECT, as aforesaid, and the claim presented with the first estimate after the changes or extra work is done. When work is performed under the terms of subparagraph 17(C) of these specifications, the Contractor shall furnish satisfactory bills payrolls and vouchers covering all items of cost and when requested by the Owner, give the Owner access to accounts relating thereto.
23. RIGHT OF OWNER TO TERMINATE CONTRACT. In the event that any of the provisions of this contract are violated by the Contractor or by any of his subcontractors, the Owner may serve written notice upon the Contractor and the surety of its intention to terminate the contract, such notices to contain the reasons for such intention to terminate the contract, and unless within ten (10) days after the serving of such notice upon the Contractor, such violation or delay shall cease and satisfactory arrangement or correction be made, the contract shall, upon the expiration of said ten (10) days, cease and terminate. In the event of any such termination, the Owner shall immediately serve notice thereof upon the surety and the Contractor, and the surety shall have the right to take over and perform the contract; provided, however, that if the surety does not commence performance thereof within ten (10) days from the date of the mailing to such surety of notice of termination, the Owner may take over the work and prosecute same to completion by the contract or by force account for the account and at the expense of the Contractor, and the Contractor and his surety shall be liable to the Owner for any excess cost occasioned thereby, and in such event the Owner may take possession of and utilize in completion the work such materials, appliances, and plant as may be on the site of the work and necessary therefore. If the Contractor should die, be declared an incompetent, be declared bankrupt or insolvent, make an assignment for the benefit of creditors during the term of his contract, the Owner may terminate the contract in the manner and under the procedure set forth above with the exception that no notices to the Contractor shall be required, but in lieu thereof, the Owner must make a reasonable effort to notify the estate of the Contractor, his guardian, assignee, or legal representative of the intention to terminate and fact of termination, if there is any such guardian, assignee, or legal representative at the time of the Owner desires to terminate.

24. CONSTRUCTION SCHEDULE AND PERIODIC PAYMENTS. Immediately after execution and delivery of the contract and before the first partial payment is made, the Contractor shall deliver to the Owner
- A. Construction Schedule. An estimated construction progress schedule in form satisfactory to the Owner, showing the proposed dates of commencement and completion of each of the various subdivisions of work required under the contract documents and the anticipated amount of each monthly payment that will become due the Contractor in accordance with the progress schedule.
 - B. Contractor's Periodic Payment Estimate. The Contractor shall also furnish:
 - 1. A detailed estimate, giving a complete breakdown of the contract price; and;
 - 2. Periodic itemized estimates of work done for the purpose of making partial payments thereon. The costs employed in making up any of these schedules will be used only for determining the basis of partial payments and will not be considered as fixing a basis for addition to or deductions from the contract price.
 - C. Materials and Equipment Delivery Schedule. The Contractor shall also prepare a schedule of anticipated shipping dates for materials and equipment. It is intended that equipment and materials be so scheduled as to arrive at the job site just prior to the time for installation to prevent excessive materials on hand for inventory and the necessity for extensive storage facilities at the job site.
25. PAYMENT TO CONTRACTOR shall be made according to the following:
- A. No later than thirty (30) days after the City's Project Manager approves the request for payment. The Owner shall make a progress payment to the Contractor on the basis of a duly certified approved estimate of the work performed during the preceding calendar month under this contract. The City requires that checks are to be mailed by USPS to the contractor. To insure the proper performance of this contract, the Owner will retain a portion of each payment until final completion and acceptance of all work covered by this contract in accordance with the following:
 - 1. Retention of 10% of payment claimed until construction is complete.
 - B. In preparing a payment request, the material delivered on the site and preparatory work done may be taken into consideration.
 - C. All material and work covered by partial payments shall thereupon become the sole property of the Owner, but this provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of materials and work upon which payments have been made or the restoration of any damaged

work, or as a waiver of the right of the Owner to require the fulfillment of all the terms of the contract.

- D. Owner's Right to Withhold Certain Amounts and Make Application Thereof. The Contractor agrees that he will indemnify and save the Owner harmless from all claims growing out of the lawful demands of subcontractors, laborers, workmen, mechanics, material, men, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this contract. The Contractor shall, at the Owner's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If the Contractor fails so to do, then the Owner may, after having served written notice on the contractor, either pay unpaid bills, of which the Owner has written notice, direct, or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the Contractor shall be resumed in accordance with the terms of this contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon the Owner to either the Contractor or his surety. In paying any unpaid bills of the Contractor, the Owner shall be deemed the agent of the Contractor, and any payment so made by the Owner shall be considered as a payment made under the contract by the Owner to the Contractor, and the Owner shall not be liable to the Contractor for any such payment made in good faith.

26. ACCEPTANCE OF WORK AND FINAL PAYMENT. Before final acceptance of the work and payment to the Contractor of the percentage retained by the Owner, the following requirements shall be compiled with:

- A. Final Inspection. Upon notice from the Contractor that their work is completed, the ARCHITECT will make a final inspection of the work and shall notify the Contractor of all instances where their work fails to comply with the specifications, as well as any defects he may discover. The Contractor shall immediately make such alterations as are necessary to make the work comply with the specifications and to satisfaction of the ARCHITECT.
- B. Operating Test. After the alterations for compliance with the specifications have been made, and before acceptance of the whole or any part of the work, it shall be subjected to test to determine that it is in accordance with the specifications. The Contractor shall maintain all work in first class condition for a thirty (30) day operating period after the work has been completed as a whole, the final inspection has been made, and the ARCHITECT has notified the Contractor in writing that the work has been finished to his satisfaction. The retained percentage as provided herein will not become due or payable to the Contractor until after the thirty (30) day operating period has expired.

- C. Cleaning Up. Before the work is considered as complete, all rubbish and unused material due to or connected with the construction must be removed and the premises left in a condition satisfactory to the Owner. Streets, curbs, crosswalks, pavements, sidewalks, fences, and other public and private property disturbed or damages should be restored to their former condition. Final acceptance will be withheld until such work is finished.
 - D. Liens. Final acceptance of the work will not be granted and the retained percentage will not be due or payable until the Contractor has furnished the Owner proper and satisfactory evidence under oath that all claims for labor and material employed or used in the construction of the work under this contract have been settled, and that no legal claims can be filed against the Owner for such labor or material.
 - E. Final Estimate. Upon completion of all cleaning up, alterations, and repairs required by the final inspection or operating test, the satisfactory completion of the operating test, and upon submitting proper and satisfactory evidence to the Owner that all claims have been settled, the Contractor shall then prepare his final estimate. After review and approval of the final estimate by the ARCHITECT and the Owner, the payment shall then become due.
27. ACCEPTANCE OF FINAL PAYMENT AS RELEASE. The acceptance by the Contractor of final payment shall be and shall operate as a release to the Owner of all claims and all liability to the Contractor for all things done or furnished in connection with this work and for every act and neglect of the Owner and others relating to or arising out of this work. No payment, final or otherwise, shall operate to release the Contractor of his sureties from any obligations under this Contract or his sureties from any obligations under this Contract or the performance and payment bond.
28. PAYMENTS BY CONTRACTOR. The Contractor shall pay:
- A. For all transportation and utility services not later than the 20th day of the calendar month following that in which services are rendered;
 - B. For all materials, tools, and other expendable equipment to the extent of ninety (90) percent of the cost thereof not later than the 20th day of the calendar month following that in which such materials, tools, and equipment are delivered at the site of the project, and the balance of the cost thereof not later than the 30th day following completion of that part of the work in or on which such materials, tools, and equipment are incorporated or used; and
 - C. To each of his subcontractors not later than the 5th day following each payment to the Contractor, the respective amounts allowed the Contractor on account of the work performed by his subcontractors to the extent of each subcontractor's interest therein.

29. INSURANCE. The Contractor shall procure and shall maintain during the life of this contract, whether such operation be by himself or by a subcontractor or any- one directly or indirectly employed by either of them, such insurance as required by statute and/or ordinance to adequately protect the Owner from any claims or damages, including bodily injury or death, which may arise from them during operations under this contract
- A. Limits of Liability. Insurance shall be obtained for not less than the limits of liability as specified in Section 00110 entitled INSURANCE REQUIREMENTS.
- B. Certificates of Insurance. The Contractor shall furnish the Owner certificates shown in the type, amount, class of operations covered, effective dates, and dates of expiration of the policies. Certificates showing proof of such insurance shall be submitted to the Owner prior to commencement of services under this Agreement. Such certificates shall contain substantially the following statement: "The insurance covered by this certificate will not be canceled or materially altered except after ten (10) days written notice has been received by the Owner". Further, it shall be an affirmative obligation upon the Contractor to advise the City's Risk Manager within two days of the cancellation or substantive
30. PAYMENT AND PERFORMANCE BONDS. The Contractor shall furnish a one hundred (100) percent performance bond and a one hundred (100) percent payment bond as security for the faithful performance of this contract, as security for the payment of all persons performing labor on the project under this contract, and furnishing materials in connection with this contract. The performance bond and payment bond shall be in separate instruments. Before the final acceptance, each bond must be approved by the Owner.
31. ASSIGNMENTS. The Contractor shall not assign the whole or any part of this contract or any moneys due or to become due hereunder without written consent of the Owner. In case the Contractor assigns all or any part of any moneys due or to become due under this contract, the instrument of assignment shall contain a clause substantially to the effect that is agreed that the right of assignee in and to any moneys due or to become due to the Contractor shall be subject to prior claims of all persons, firms, and corporations for services rendered or materials supplied for the performance of the work called for in this contract.
32. MUTUAL RESPONSIBILITY OF CONTRACTORS. If through acts of neglect on the part of the Contractor, any other contractor or any sub- contractor shall suffer loss or damage on the work, the Contractor agrees to settle with such other contractor or subcontractor by agreement or arbitration. If such other contractor or subcontractor shall assert any claim against the Owner on account of any damage alleged to have been sustained, the Owner shall notify the Contractor, who shall indemnify and save harmless the Owner against any such claim.
33. SEPARATE CONTRACTS. The Contractor shall coordinate his operations with those of other contractors. Cooperation will be required in the arrangement for the storage of

materials and in the detailed execution of the work. The Contractor, including his subcontractor, shall keep informed of the progress and the detail work of other contractors and shall notify the ARCHITECT immediately of lack of progress or defective workmanship on the part of other contractors. Failure of a contractor to keep informed of the work progressing on the site and failure to give notice of lack of progress or defective workmanship by others shall be construed as acceptance by him of the status of the work as being satisfactory for proper coordination with his own work.

34. SUBCONTRACTING shall comply with the following:

- A. Subcontractors must be registered with SAM.gov and not be suspended or debarred.
- B. The Contractor may utilize the services of specialty contractors on those parts of the work which under normal contracting practices are performed by specialty subcontractors.
- C. The Contractor shall not award any work to any subcontractor without prior written approval of the Owner, which approval will not be given until the Contractor submits to the Owner a written statement concerning the proposed award to the subcontractor, which statement shall contain such information as the Owner may require.
- D. The Contractor shall be as fully responsible to the Owner for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them, as he for the acts and omissions of persons employed by him.
- E. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of General Conditions and other contract documents insofar as applicable to the work of subcontractors and to give the Contractor the same power as regards terminating any subcontract that the Owner may exercise over the Contract under any provisions of the contract documents.
- F. Nothing contained in this contract shall create any contractual relation between any subcontractor and the Owner.

35. ARCHITECT'S AUTHORITY. The ARCHITECT shall determine the amount, quality, acceptability, and fitness of the several kinds of work and materials which are to be paid for under this contract and shall decide all questions which may arise in relation to said work and the construction thereof. The ARCHITECT's estimates and decisions shall be final and conclusive, except as herein otherwise expressly provided. In case any questions shall arise between the parties hereto relative to said contract or specifications, the determination or decision of the ARCHITECT shall be a condition precedent to the right of the Contractor to receive any money or payment for work under this contract affected in any manner or to any extent by such questions.

- A. Interpretation of Drawings and Specifications. The ARCHITECT shall decide the meaning and intent of any portion of the specifications and of any plans or drawings where the same may be found obscure or be in dispute. Any differences or conflicts in regard to their work, which may arise between the Contractor under this contract and other contractors performing work for the Owner, shall be adjusted and determined by the ARCHITECT.
36. STATED ALLOWANCES: N/A
37. USE OF PREMISES AND REMOVAL OF DEBRIS. The Contractor expressly undertakes at his own expense:
- A. To take every precaution against injuries to persons or damage to property. To make arrangements with adjacent property owners for parking of equipment if necessary.
- B. To store his apparatus, materials, supplies, and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of his work or the work of any other contractors.
- C. To place upon the work or any part thereof only such loads as are consistent with the safety of that portion of the work.
- D. To clean up frequently all refuse, rubbish, scrap materials, and debris caused by his operations, to the end that at all times the site of the work shall present a neat, orderly, and workmanlike appearance.
- E. Before final payment to remove all surplus material, false work, temporary structures, including foundations thereof, plant of any description and debris of every nature resulting from his operations, and to put the site in a neat, orderly condition.
- F. To effect all cutting, fitting, or patching of his work required to make the same conform to the plans or specifications, and, except with the consent of the ARCHITECT, not to cut or otherwise alter the work of any other contractor.
38. QUANTITIES OF ESTIMATE. The estimated quantities of work to be done and materials to be furnished under this contract, shown in any of the documents, including the proposal, are given for use in comparing bids, and the right is especially reserved except as herein otherwise specifically limited, to increase or diminish them as may be deemed reasonably necessary or desirable by the Owner to complete the work contemplated by this contract, and such increase or diminution shall in no way vitiate this contract, nor shall any such increase or diminution give cause for claims or liability for damages.

39. RIGHTS-OF-WAY AND SUSPENSION OF WORK. The Owner shall furnish all land and rights-of-way necessary for the carrying out of this contract and the completion of the work herein contemplated, and will use due diligence in acquiring said land and rights-of-way as speedily as possible. But it is possible that all lands and rights-of-way may not be obtained as herein contemplated before construction begins, in which event the Contractor shall begin his work upon such land and rights-of-way as the Owner may have previously acquired, and no claim for damages whatsoever will be allowed by reason of the delay in obtaining the remaining lands and rights-of-way.

Should the Owner be prevented or enjoined from proceeding with the work, or from authorizing its prosecution, either before or after the commencement, by reason of any litigation or by reason of its ability to procure any lands or rights-of-way for said work, the Contractor shall not be entitled to make or assert claim for damage by reason of said delay or to withdraw from the contract except by consent of the Owner; but time for completion of the work will be extended to such time as the Owner determines will compensate for the time lost by such delay, such determination to be set forth in writing.

40. GENERAL WARRANTY FOR ONE YEAR AFTER COMPLETION OF CONTRACT. For a period of ONE (1) year after the completion of the contract, the Contractor warrants the fitness and soundness of all work done and materials and equipment put in place under the contract, and neither the final certificate of payment nor any provision in the Contract Documents nor partial or entire occupancy of the premises by the Owner shall constitute an acceptance of work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility.

41. NOTICE AND SERVICE THEREOF. Any notice to any Contractor from the Owner relative to any part of this contract shall be in writing and considered delivered and the service thereof completed, when said notice is posted by registered mail to said Contractor or his authorized representative on the work, or is deposited in the regular United States Mail in sealed, postage prepaid envelope, and the receipt thereof is acknowledged by the Contractor.

A. Owner's Notice. All papers required to be delivered to the Owner shall be delivered as indicated in Section 00015 entitled REFERENCES.

42. REQUIRED PROVISIONS DEEMED INSERTED. Each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein, and the contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted or is not correctly inserted, then upon the application of either party, the contract shall forthwith be physically amended to make such insertion or correction.

43. PROTECTION OF LIVES AND HEALTH. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

- A. All persons on the Site or who may be affected by the Work:
- B. All the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
- C. Other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property. All damage, injury, or loss to any property caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or ARCHITECT or ARCHITECT's Consultant, or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them). Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and ARCHITECT has issued a notice to Owner and Contractor that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

- 44. WAGES AND OVERTIME COMPENSATION. The Contractor and each of his subcontractors shall comply with all applicable State and local laws or ordinances with respect to the hours worked by laborers and mechanics engaged in work on the project and with respect to compensation for overtime. **Contractor shall pay according to Davis Bacon Act wages and submit certified payrolls.**
- 45. PROHIBITED INTERESTS. No official of the Owner, who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept, or approve or to take part in negotiating, making, accepting, or approving any architectural, inspection, construction, or material supply contract or any sub- contract in connection with the construction of the project, shall become directly or indirectly interested personally in this contract or in any part hereof. No officer, employee, architect, attorney, engineer, or inspector of and on behalf of the Owner to exercise any legislative, executive, supervisory, or other similar functions in connection with the construction of the project shall become directly or

indirectly interested personally in this contract or in any part hereof, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the project.

46. CONFLICTING CONDITIONS. Any provisions in any of the Contract Documents which may be in conflict or inconsistent with any of the paragraphs in these General Conditions shall be void to the extent of such conflict or inconsistency.

47. INDEMNIFICATION

- A. The Contractor will indemnify and hold harmless the Owner, the Architect, and their agents and employees from and against all claims, damages, losses, and expenses including attorney's fees arising out of or resulting from the performance of the Work, provided that any such claims, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use resulting therefrom; and is caused in whole or in part by any negligent or willful act of omission of the Contractor and Sub-Contractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.
- B. In any and all claims against the Owner or the Architect, or any of their agents or employees, by an employee of the Contractor, any Sub-Contractor, anyone directly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor or any Subcontractor under workmen's compensation acts, disability benefit acts, or other employee benefit acts.

(END OF SECTION)

**SECTION 008000
SUPPLEMENTARY CONDITIONS**

1. **WORKING HOURS**

The Contractor is allowed to work during normal working hours from 7:00 AM to 6:00 PM unless warranted due to emergency conditions.

If the Contractor is to work outside normal working hours, then it is the Contractor's responsibility to contact the City for approval.

2. **PEDESTRIAN PROTECTION AND TRAFFIC CONTROL**

The Contractor must provide pedestrian protection and traffic control as required.

3. **CITY BUSINESS LICENSE AND PERMITS**

The selected contractor shall be required to obtain a City of Georgetown annual or “per-job” business licenses. Contact Revenues Manager, 843-545-4041, to obtain a City business license.

Contractor shall secure all necessary asbestos abatement and demolition permits from SC DHEC and the City. Contractor shall secure all necessary building permits from the City.

These expenses shall be included in the total bid price.

4. PROJECT SCHEDULE OF EVENTS

The following is the schedule of events listed in the order of occurrence, showing the major milestones from issuance of the RFP to the contract award:

No.	MILESTONE EVENT	DATE	TIME EST (LOCAL TIME)
1	Request for Bids (RFB) Release Date	Wednesday, January 25, 2023	
	Non-Mandatory Pre-Bid Conference	Wednesday, February 8, 2023	2:00 PM
2	Deadline for written questions - emailed to: purchasing@georgetownsc.gov	Wednesday, February 15, 2023	2:00 PM
3	Deadline for addenda to be posted to the City's website, www.georgetownsc.gov	Monday, February 20, 2023	2:00 PM
4	Proposals due date	Monday, February 27, 2023	2:00 PM
5	Bid Approval by City Council and Department of Commerce (Tentative)	April 20, 2023	
6	Issue Notice of Award (Tentative)	April 21, 2023	
7	Construction Start Date	May 01, 2023	
8	Construction Finish Date (180 days after Start Date)	October 28, 2023	
9	Grant Closeout Date (60 days after Finish Date)	December 27, 2023	

5. CDBG CONTRACT SPECIAL PROVISIONS

The successful Contractor and Subcontractors shall adhere to all the CDBG Contract Special Provisions.

The successful Bidder must complete all the required CDBG forms prior to award.

See Appendix documents.

6. CDBG DEMOLITION REQUIREMENTS

Itemization of dump tickets is required as it pertains to CDBG revitalization projects or projects involving demolition.

When it is necessary for debris to be dumped at a landfill, the Contractor must provide itemized dump tickets to support the amounts invoiced by the Contractor.

Properly itemized dump tickets should (legibly) include the following:

- The Contractor's Name
- The name of the dump location
- Tax Map ID and or physical address (preferably both)
- Total Tons
- Dump Cost per Ton

(END OF SECTION)

Field Inspection (date and completed by):

Asbestos inspection – May 2017
Orlando Ortega, City Engineer – October 2021

Summary of Findings and Conclusions (discuss whether the review indicated the preferred alternative will have an adverse impact on the environment and how it will impact the end users):

After completion of the Environmental Review, it has been determined that the project will have no adverse impact on the environment. All recommendations from the contacted agencies will be followed and applicable permits will be obtained. The proposed project will allow the City of Georgetown to take proactive steps in the fight against the spread of Covid 19 and increase the opportunity for the county to prepare for, respond to, and prevent coronavirus.

Mitigation Measures and Conditions [40 CFR 1505.2(c)]

Summarize below all mitigation measures adopted by the Responsible Entity to reduce, avoid, or eliminate adverse environmental impacts and to avoid non-compliance or non-conformance with the above-listed authorities and factors. These measures/conditions must be incorporated into project contracts, development agreements, and other relevant documents. The staff responsible for implementing and monitoring mitigation measures should be clearly identified in the mitigation plan.

Law, Authority, or Factor	Mitigation Measure
SCDNR	<p><i>*All necessary measures must be taken to prevent oil, tar, trash, and other pollutants from entering the adjacent offsite areas/wetlands/water.</i></p> <p><i>*Once the project is initiated, it must be carried to completion in an expeditious manner to minimize the period of disturbance to the environment.</i></p> <p><i>*Upon completion, all disturbed areas must be permanently stabilized with vegetative cover (preferable), riprap or other erosion control methods as appropriate.</i></p> <p><i>*Prior to beginning any land disturbing activity, appropriate erosion and siltation control measures (e.g., silt fences or barriers) must be in place and maintained in a functioning capacity until the area is permanently stabilized.</i></p> <p><i>*Materials used for erosion control (e.g., hay bales or straw mulch) will be certified as weed free by the supplier.</i></p> <p><i>*Inspecting and ensuring the maintenance of temporary erosion control measures at least:</i></p> <ul style="list-style-type: none"><i>a. on a daily basis in areas of active construction or equipment operation;</i><i>b. on a weekly basis in areas with no construction or equipment operation; and</i><i>c. within 24 hours of each 0.5 inch of rainfall.</i> <p><i>*Ensuring the repair of all ineffective temporary erosion control measures within 24 hours of identification, or as soon as conditions allow if compliance with this time frame would result in greater environmental impacts.</i></p>

	<p><i>*Land disturbing activities must avoid encroachment into any wetland areas (outside the permitted impact area). Wetlands that are unavoidable impacted must be appropriately mitigated.</i></p> <p><i>The project must be in compliance with any applicable floodplain, stormwater, land disturbance, shoreline management guidance or riparian buffer ordinances.</i></p>
USACE	<p><i>Since portions of the project may be subjected to flood hazards from Sampit River, project design should include provisions to (a) assure that flood hazards will not be created by flow obstruction or debris collection, (b) protect the pipes from high velocity flow at stream crossings, (c) prevent water pollution due to flooded sewer systems, and (d) flood proof any electrical/mechanical equipment that would be damaged by flood waters.</i></p>
SHPO	<p><i>The Catawba are to be notified if Native American artifacts and/or human remains are located during the ground disturbance phase of this project.</i></p>

**SECTION 009000
DRAWING INDEX**

<u>DRAWING NO.</u>	<u>TITLE</u>
T100	TITLE SHEET, CODE SUMMARY
T101	ABBREVIATIONS, LEGEND, & CONDOC
T102	LIFE SAFETY PLAN
C100	SURVEY – EXISTING CONDITIONS
A100	ARCHITECTURAL SITE PLAN
A101	DEMOLITION AND FIRST FLOOR PLAN
A120	ROOF PLAN, REFLECTED CEILING PLAN
A201	EXTERIOR ELEVATIONS
A310	WALL SECTIONS, PLAN DETAIL AT TYPICAL PIER
A311	WALL SECTIONS
A401	ENLARGED PLANS
A402	INTERIOR ELEVATIONS, FINISH SCHEDULE, DOOR SCHEDULE
A501	FIREPLACE / CHIMNEY WALL SECTION AND DETAILS - ALTERNATE #1
A621	WALL TYPES
S001	GENERAL NOTES
S100	DEMO PLAN
S101	FOUNDATION PLAN
S102	SLAB PLAN
S103	ROOF FRAMING PLAN
S201	ELEVATIONS
S202	ELEVATIONS
S601	TYPICAL FOUNDATION AND SLAB DETAILS
S611	TYPICAL MASONRY DETAILS
S612	TYPICAL MASONRY DETAILS
S621	TYPICAL STEEL DETAILS
S701	SECTIONS AND DETAILS
S702	SECTIONS AND DETAILS
S703	SECTIONS AND DETAILS
D-101	MECHANICAL, ELECTRICAL, PLUMBING DEMOLITION PLAN
P-101	PLUMBING PLAN - SUPPLY
P-201	PLUMBING PLAN - DRAIN AND WASTE
P-301	PLUMBING PLAN - VENT
P-401	PLUMBING SCHEDULES, DETAILS, SPECS
M-101	MECHANICAL PLAN
M-201	MECHANICAL SCHEDULES, DETAILS, SPECS

E-001	ELECTRICAL SITE PLAN
E-101	ELECTRICAL PLAN - POWER
E-201	ELECTRICAL PLAN – LIGHTING
E-301	ELECTRICAL SCHEDULES, DETAILS, SPECS

(END OF SECTION)

**SECTION 010500
FIELD ENGINEERING**

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Work included: Provide such field engineering services as are required for proper completion of the Work including, but not necessarily limited to:
 - 1. Establish the proper line and levels for installation of utilities.
 - 2. Establish the proper grades and elevations for earthwork.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Additional requirements for field engineering also may be described in other Sections of these Specifications. These include but are not limited to the following:

1.2 QUALITY ASSURANCE

- A. Provide a competent survey party and surveying instruments for staking the work.
- B. Exercise proper precautions to verify the figures shown on the Drawings prior to laying out any part of the Work.
 - 1. The Contractor will be held responsible for any errors therein that otherwise might have been avoided.
 - 2. Promptly inform the Architect of any error or discrepancies discovered in the Drawings or Specifications in order that proper corrections may be made.

1.3 PROCEDURES:

- A. Locate and protect control points before starting work on the site.
- B. Preserve permanent reference points during progress of the Work.
- C. Do not change or relocate reference points or items of the Work without specific approval from the Architect.
- D. Promptly advise the Architect when a reference point is lost or destroyed, or requires relocation because of other changes in the Work.

1.4 CONSTRUCTION LAYOUT:

- A. Perform calculations, and the set of marks and stakes necessary to ensure that the work conforms to the required lines, grades, and dimensions.
- B. Relate such layout to the coordinate grid system, elevation datum, and related survey control monuments and bench marks identified on the drawings or elsewhere in the contract documents.

**BOBBY ALFORD
PAVILION PROJECT**

**CITY OF GEORGETOWN
SOUTH CAROLINA**

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION (NOT APPLICABLE)

(END OF SECTION)

**SECTION 010600
REGULATORY REQUIREMENTS**

The following requirements of Regulatory Agencies having an interest in this project are hereby made a part of this Contract.

- 1.1 The construction of the project, including the letting of the contracts in connection therewith, shall conform to the applicable requirements of State, territorial and local laws and ordinances to the extent that such requirements do not conflict with Federal laws and this subchapter.
- 1.2 South Carolina Sales Tax: All applicable South Carolina sales tax shall be to the account of the Contractors.
- 1.3 Use of chemicals: All chemicals used during the project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification, must show approval of EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with instructions.
- 1.4 Safety and Health Regulations: The Contractor shall comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL 91-54)
- 1.5 The Contractor shall comply with Part V of the South Carolina Manual on Uniform Traffic Control Devices for Streets and Highways.
- 1.6 Inspection by Agencies: The representatives of the South Carolina Department of Health and Environmental Control, USDA Rural Development, Environmental Protection Agency, Department of Natural Resources and the Corps of Engineers shall have access to the work wherever it is, in preparation or in progress, and the Contractor shall provide proper facilities for such access and inspection.
- 1.7 Withholding for non-residents shall comply with the following:
 - A. Attention of non-residents Contractors is invited to Code Sections 12-8-540 and 12-8-550 as amended effective July 1, 1994, Section 49, Appropriations Bill, Part II.
 - B. If a non-resident Contractor is the successful bidder on this project, he/she shall be required to provide the Owner with an Affidavit (Form I-312, Nonresident Taxpayer Registration Affidavit Income Tax Withholding) affirming registration with the South Carolina Department of Revenue or the South Carolina Secretary of State's office. (Refer to attached form)
 - C. Forms to register for all taxes administered by the South Carolina Department of Revenue may be obtained by calling the License and Registration Section at (803) 737-4872 or writing to South Carolina Department of Revenue, Registration Unit, Columbia, South Carolina 29214-0140.
 - D. In the absence of an Affidavit being provided, withholding in the amount of two (2) percent of the contract price will be made by the Owner.

- 1.8 Bypassing of Wastewater: No wastewater bypassing will be permitted during construction unless a schedule has been approved by the South Carolina Department of Health and Environmental Control (SC DHEC), and if required pursuant to the terms of the NPDES Permit.
 - A. Schedule work to minimize bypassing
 - B. Coordinate all work which will affect operation of the existing facility with the Owner and the Architect to assure the least amount of interruption possible to the operation of the facility.
 - C. Make no connections to the existing facility diverting flow to the new facility until directed by the Architect.

(END OF SECTION)

**SECTION 010610
PERMITS AND RIGHTS-OF-WAY**

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Work Included: This section established requirements pertaining to the securing and paying for licenses, building permits, right-of-way, etc. necessary for the construction of the project.
- B. Work Not Include: Owner will obtain and provide to the Contractor, as required, copies of the following:
 - 1. South Carolina Department of Transportation Encroachment Permit for work in the State Right-of-Way
- C. Related Work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Additional requirements for field engineering also may be described in other Sections of these Specifications. These include but are not limited to the following:
 - a) None

1.2 SUBMITTALS

- A. Submit to the Owner satisfactory evidence that all necessary licenses, building permits, etc., have been secured prior to commencing the work.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION

2.1 BUSINESS LICENSE

- A. Determine licenses necessary to perform the work at project location.
- B. Obtain all necessary licenses at no permits required, whether of temporary or permanent nature.

2.2 BUILDING PERMITS

- A. Secure and pay for all building permits required, whether temporary or permanent nature.

2.3 RIGHT-OF-WAY, EASEMENTS

- A. Owner will provide necessary rights-of-way or easements for construction of utility lines, roads and sidewalks whether on privately or publicly owned property

- B. The Contractor shall confine their activities to the provided rights-of way and/or easements
 - C. The Owner will provide no other rights-of way and/or easements over the property.
- 2.4 LAND

- A. Owner will provide necessary land for construction of treatment facilities, lift stations, pump stations, parks and buildings, whether on privately or publicly owned property

(END OF SECTION)

**SECTION 010900
REFERENCED STANDARDS**

PART 1 – GENERAL

1.1 DESCRIPTION

A. Throughout the Project Documents, reference is made to specifications and standards issued by nationally recognized professional and/or trade organizations:

1. These referenced standards are generally identified by abbreviating the name of the organization following with the specification/standard number.
2. Unless specifically indicated otherwise, all references to standards refer to the latest edition available at the time of the bidding.

1.2 ABBREVIATIONS

A. Wherever the following abbreviations are used in these Project Documents, they are to be construed the same as the respective expressions represented:

AASHTO American Association of State Highway and Transportation Officials

ACI American Concrete Institute

AISC American Institute of Steel Construction

ALS American Lumber Standards

ANSI American National Standards Institute, Inc

ASTM American Society for Testing and Materials

AWWA American Water Works Association

AWPA American Wood Preservers Association

AWS American Welding Society

FSS Federal Specifications and Standards

GSA General Services Administration

IBC International Building Code

NACE National Association of Corrosion Engineers

NFPA National Fire Protection Association

NSF Formerly: National Sanitary Foundation

OSHA Occupational Safety and Health Administration

SPIB Southern Pine Inspection Bureau

SSPC Steel Structures Painting Council

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION (NOT APPLICABLE)

(END OF SECTION)

**SECTION 012000
CONTRACTOR/SUBCONTRACTOR QUALIFICATION**

PART 1 – GENERAL

The following information and completed forms may be requested by the Owner of the three lowest bidders. The request will be made within five (5) days following the bid opening. Requested data to be received by the Owner within five (5) days of the request. Failure to provide the data in this section, upon request, will subject bidder to disqualification.

1.1 DESCRIPTION

- A. Information submitted will be used by the Owner to determine the competency and ability of the Contractor/Subcontractor to perform the scheduled work in a manner deemed satisfactory to the Owner. The Owner’s decision shall be final.
- B. Any Subcontractor used by the General Contractor whose portion of this project exceeds 10% of the total bid shall be required to provide the same information as the General Contractor.
- C. The Contractor/Subcontractor shall include with this section a detailed financial statement indicating the Contractor’s/Subcontractor’s financial resources. The information on that statement shall be certified by a Certified Public Accountant and shall be submitted on the Associated General Contractors of America from “Standard Questionnaires and Financial Statement for Bidders.”
- D. The Contractor/Subcontractor shall certify by attaching his signature to this Section as provided that all information contained herein is complete and all statements and answers are accurate and true. Providing misinformation, incomplete information, inaccurate information, or failure to certify the information, will subject bidder to disqualification.

1.2 QUALIFICATIONS

- A. Complete the following (attach additional sheets as required):
 - 1. Name: _____
 - 2. Address: _____
 - 3. City, State, Zip: _____
 - 4. Principal: _____
- B. Number of years your firm has been in business: _____
- C. List and describe a minimum of five (5) previous projects of similar size and nature completed in the last five (5) years. (Attach additional sheets, if necessary):
 - 1. _____

2. _____

3. _____

4. _____

5. _____

D. List Owner, contact and telephone number for each of the five (5) projects referenced above. (Attach additional sheets, if necessary):

1. _____

2. _____

3. _____

4. _____

5. _____

E. For the projects listed in Item C, list the original bid price, final construction costs, specified completion time, actual completion time and explanations for differences in costs and times as required. (Attach additional sheets, if necessary):

1. Original contract price: _____
Final construction price: _____
Specified completion time: _____
Actual completion time: _____
Explanation: _____

2. Original contract price: _____
Final construction price: _____
Specified completion time: _____
Actual completion time: _____

Explanation: _____

3. Original contract price: _____

Final construction price: _____

Specified completion time: _____

Actual completion time: _____

Explanation: _____

4. Original contract price: _____

Final construction price: _____

Specified completion time: _____

Actual completion time: _____

Explanation: _____

5. Original contract price: _____

Final construction price: _____

Specified completion time: _____

Actual completion time: _____

Explanation: _____

F. List the names, addresses and work of any portion of this project which will be subcontracted (more than 10% of the bid price). (Attach additional sheets, if necessary):

1. _____

2. _____

3. _____

4. _____

5. _____

G. List equipment owned that is available for this project:

H. List equipment to be purchased, leased or rented to perform this work:

I. List superintendent(s), foreman or others in charge who will be assigned to this project. Provide resumes and qualifications (insert sheets as required):

J. List and describe current projects, current statuses of job and estimate schedule of completion. (Attach additional sheets, if necessary):

1. _____

2. _____

3. _____

4. _____

5. _____

K. List past projects completed with Owner of project proposed in last five (5) years.
(Attach additional sheets, if necessary):

1. _____

2. _____

3. _____

4. _____

5. _____

L. List past projects bid on with Owner of project proposed in last five (5) years.
(Attach additional sheets, if necessary):

1. _____

2. _____

3. _____

4. _____

5. _____

M. List all past projects completed with Engineer in past five (5) years (Attach additional sheets, if necessary):

1. Project Name: _____

Project Manager: (Engineer's): _____

Original contract price: _____

Final construction price: _____

Specified completion time: _____

Actual completion time: _____

Explanation: _____

2. Project Name: _____

Project Manager: (Engineer's): _____

Original contract price: _____

Final construction price: _____

Specified completion time: _____

Actual completion time: _____

Explanation: _____

3. Project Name: _____

Project Manager: (Engineer's): _____

Original contract price: _____

Final construction price: _____

Specified completion time: _____

Actual completion time: _____

Explanation: _____

4. Project Name: _____

Project Manager: (Engineer's): _____

Original contract price: _____

Final construction price: _____

Specified completion time: _____

Actual completion time: _____

Explanation: _____

5. Project Name: _____

Project Manager: (Engineer's): _____

Original contract price: _____

Final construction price: _____

Specified completion time: _____

Actual completion time: _____

Explanation: _____

N. List all projects involving litigation, arbitration and/or mediation in past five (5) years (Attach additional sheets, if necessary):

1. Project Name: _____

Owner: _____

Engineer: _____

Date: _____

Explanation: _____

Result: _____

2. Project Name: _____

Owner: _____

Engineer: _____

Date: _____

Explanation: _____

Result: _____

3. Project Name: _____

Owner: _____

Engineer: _____

Date: _____

Explanation: _____

Result: _____

4. Project Name: _____

Owner: _____

Engineer: _____

Date: _____

Explanation: _____

Result: _____

5. Project Name: _____

Owner: _____

Engineer: _____

Date: _____

Explanation: _____

Result: _____

- O. Attach rate schedule for equipment, labor, overhead and profit.
- P. Additional information:

I hereby certify that as a duly authorized representative of _____
(bidder), the information provided is to the best of my knowledge accurate and that failure to
provide accurate information will result in disqualification of my bid.

(Seal)

Signature

Name (Print)

Title

Date

Notary Public of _____ (State)

My commission expires: _____

(END OF SECTION)

**SECTION 012100
PRECONSTRUCTION CONFERENCE**

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Work included: To help clarify construction contract administration procedures, the Engineer will conduct a Preconstruction Conference prior to start of the Work. Provide attendance by the designated personnel.
- B. Related work: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.2 QUALITY ASSURANCE

- A. For those persons designated by the Contractor, his Subcontractors, and suppliers to attend the Preconstruction Conference, provide required authority to commit the entities they represent to solutions agreed upon in the Conference.

1.3 SUBMITTALS

- A. To the maximum extent practicable, advise the Engineer at least 24 hours in advance of the Conference as to items to be added to the agenda.
- B. The Engineer will compile minutes of the Conference, and will furnish one copy of the minutes to the Contractor and required copies to the Owner. The Contractor may make and distribute such other copies as he/she wishes.

1.4 PRECONSTRUCTION CONFERENCE

- A. The Conference is mandatory and will be scheduled to be held within 30 working days after the Owner has determined the low bidder and may be held prior to issuance of the Notice to Proceed when required by regulatory agencies having jurisdiction. In any event, the Conference will be held prior to actual start of the work.
- B. Attendance:
 - 1. Provide attendance by authorized representatives of the Contractor and major subcontractors. The Architect will advise other interested parties, including the Owner, and request their attendance.
- C. Minimum agenda: Data will be distributed and discussed on:
 - 1. Organizational arrangement of Contractor's forces and personnel and those of subcontractors, materials suppliers, and the Architect.
 - 2. Channels and procedures for communication.
 - 3. Construction schedule, including sequence of critical work.
 - 4. Contract Documents, including distribution of required copies of Drawings and revisions.
 - 5. Processing of Shop Drawings and other data submitted to the Architect for review.

6. Processing of field decisions and Change Orders.
7. Rules and regulations governing performance of Work.
8. Procedures for security, quality control, housekeeping, and related matters.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION (NOT APPLICABLE)

(END OF SECTION)

**SECTION 012200
PROJECT MEETINGS**

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Work included: To enable orderly review during progress of the Project, and to provide for systematic discussion of problems, the Engineer will conduct project meetings throughout the construction period.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. The Contractor's relations with his subcontractors and materials suppliers, and discussions relative thereto, are the Contractor's responsibility and normally are not part of the project meetings content.

1.2 QUALITY ASSURANCE

- A. For those persons designated by the Contractor to attend and participate in project meetings, provide required authority to commit the Contractor to solutions agreed upon in the meetings.

1.3 SUBMITTALS

- A. Agenda items: To the maximum extent practicable, advise the Architect at least 48 hours in advance of project meetings regarding items to be added to the agenda.
- B. Minutes:
 - 1. The Contractor will compile Minutes of each project meeting, and will furnish a copy to the Architect and required copies to Owner.
 - 2. Recipients of copies may make and distribute such other copies as they wish.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION

3.1 MEETING SCHEDULE

- A. Project meetings will be held monthly.
- B. Coordinate as necessary to establish mutually acceptable schedule for meetings.

3.2 MEETING LOCATION

- A. The meeting will be held at the City of Georgetown – Water Utilities and Engineering Department.

2377 Anthuan Maybank Drive
Georgetown, SC 29440

3.3 PROJECT MEETINGS

- A. Attendance:

1. To the maximum extent practicable, assign the same person or persons to represent the Contractor at project meetings throughout progress of the Work.
2. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspect of the Work is involved.

- B. Minimum agenda:

1. Review, revise as necessary, and approve Minutes of previous meetings.
2. Review Safety Plan and any incidents since last meeting.
3. Review progress of the Work since last meeting, including status of submittals for approval.
4. Identify problems that impede planned progress.
5. Develop corrective measures and procedures to regain planned schedule.
6. Complete other current business.

3.4 Revision to Minutes:

- A. Unless published Minutes are challenged in writing prior to the next regularly scheduled progress meeting, they will be accepted as properly stating the activities and decisions of the meeting.
- B. Persons challenging published Minutes shall reproduce and distribute copies of the challenged to all Minutes.
- C. Challenge to Minutes shall be settled as priority portion of “old business” at the next regularly scheduled meeting.

(END OF SECTION)

SECTION 012300 - ALTERNATES

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 alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
 - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include, as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation, whether or not indicated as part of alternate.
- B. Execute accepted alternates under the same conditions as other Work of the Contract.
- C. Schedule: A Part 3 "Schedule of Alternates" Article is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

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PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. Alternate No. 1: Construct fireplace and chimney per drawings on sheet A501.
- B. Alternate No. 2: Apply stucco on CMU wall types 2A & 3A in lieu of painting wall.
- C. Alternate No. 3: Install (1) overhead ceiling fan as shown on architectural & electrical drawings.
 - 1. Base Bid: Include power and junction box only for future fan installation.
 - 2. Alternate: Provide fan as indicated on drawings including seismic bracing as required.
- D. Alternate No. 4: Delete construction of new brick/CMU piers from scope of work, including metal coping and flashing at top of piers. Exposed portal frames to be cleaned and painted.

END OF SECTION 012300

SECTION 012900 - PAYMENT 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 necessary to prepare and process Applications for Payment.
- B. Related Requirements:
 - 1. Section 013100 "Construction Schedules" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to Architect at earliest possible date, but no later than 10 calendar days before the date scheduled for submittal of initial Applications for Payment.
 - 3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.
 - 4. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.
 - 5. Subschedules for Separate Design Contracts: Where the Owner has retained design professionals under separate contracts who will each provide certification of payment requests, provide subschedules showing values coordinated with the

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scope of each design services contract, as described in Section 011000 "Summary."

- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Owner's name.
 - c. Owner's Project number.
 - d. Name of Architect.
 - e. Architect's Project number.
 - f. Contractor's name and address.
 - g. Date of submittal.
 2. Arrange schedule of values consistent with format of AIA Document G703.
 3. Arrange the schedule of values in tabular form, with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.
 - 1) Labor.
 - 2) Materials.
 - 3) Equipment.
 4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
 5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site.
 6. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.

7. Purchase Contracts: Provide a separate line item in the schedule of values for each Purchase contract. Show line-item value of Purchase contract. Indicate Owner payments or deposits, if any, and balance to be paid by Contractor.
8. Overhead Costs, Proportional Distribution: Include total cost and proportionate share of general overhead and profit for each line item.
9. Temporary Facilities: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
10. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling 2 percent of the Contract Sum and subcontract amount.
11. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments, as certified by Architect and paid for by Owner.
- B. Payment Application Times: The date for each progress payment is indicated in the Owner/Contractor Agreement. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
 1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect.
- C. Application for Payment Forms: Use 006100 "Application for Payment".
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
 1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.

2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- F. Transmittal: Submit one PDF signed and notarized original copy of each Application for Payment to Architect by a method ensuring receipt within 24 hours. Copy shall include waivers of lien and similar attachments if required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit conditional final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.
- H. Corrective Action Log: With each application for payment, submit an updated log in accordance with 013100 "Project Management and Coordination".
- I. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following. Failure to provide the following prior to the first application for payment may result in delay of payment.
1. List of subcontractors.
 2. Schedule of values.
 3. Contractor's construction schedule (preliminary if not final).
 4. Products list (preliminary if not final).
 5. Sustainable design action plans, including preliminary project materials cost data.
 6. Schedule of unit prices.
 7. Submittal schedule (preliminary if not final).
 8. List of Contractor's staff assignments.

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9. List of Contractor's principal consultants.
 10. Copies of building permits.
 11. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 12. Initial progress report.
 13. Report of preconstruction conference.
 14. Certificates of insurance and insurance policies.
 15. Performance and payment bonds.
 16. Data needed to acquire Owner's insurance.
- J. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 - a. Complete administrative actions, submittals, and Work preceding this application, as described in Section 017000 "Contract Closeout."
 2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- K. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Certification of completion of final punch list items.
 3. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 4. Updated final statement, accounting for final changes to the Contract Sum.
 5. AIA Document G706.
 6. AIA Document G706A.
 7. AIA Document G707.
 8. Evidence that claims have been settled.
 9. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 10. Final liquidated damages settlement statement.
 11. Proof that taxes, fees, and similar obligations are paid.
 12. Waivers and releases.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - CONSTRUCTION SCHEDULES

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 documenting the progress of construction during performance of the Work, including the following:
 - 1. Startup construction schedule.
 - 2. Contractor's Construction Schedule.
 - 3. Construction schedule updating reports.
 - 4. Daily construction reports.
 - 5. Material location reports.
 - 6. Site condition reports.
 - 7. Unusual event reports.
- B. Related Requirements:
 - 1. Section 014000 "Quality Requirements" for schedule of tests and inspections.
 - 2. Section 006100 "Application for Payment" for schedule of values and requirements for use of cost-loaded schedule for Applications for Payment.

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.
 - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine the critical path of Project and when activities can be performed.
- C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

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- D. Event: The starting or ending point of an activity.
- E. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- F. Resource Loading: The allocation of manpower and equipment necessary for completing an activity as scheduled.

1.4 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
 - 1. PDF file.
- B. Startup construction schedule.
- C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.
- D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
- E. Construction Schedule Updating Reports: Submit with Applications for Payment.
- F. Daily Construction Reports: Submit at weekly intervals.
- G. Material Location Reports: Submit at monthly intervals.
- H. Site Condition Reports: Submit at time of discovery of differing conditions.
- I. Unusual Event Reports: Submit at time of unusual event.
- J. Qualification Data: For scheduling consultant.

1.5 QUALITY ASSURANCE

- A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of Architect's request.
- B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's Construction Schedule, including, but not limited to, the following:

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1. Review software limitations and content and format for reports.
2. Verify availability of qualified personnel needed to develop and update schedule.
3. Discuss constraints, including phasing, work stages, area separations, interim milestones, and partial Owner occupancy.
4. Review delivery dates for Owner-furnished products.
5. Review schedule for work of Owner's separate contracts.
6. Review submittal requirements and procedures.
7. Review time required for review of submittals and resubmittals.
8. Review requirements for tests and inspections by independent testing and inspecting agencies.
9. Review time required for Project closeout and Owner startup procedures.
10. Review and finalize list of construction activities to be included in schedule.
11. Review procedures for updating schedule.

1.6 COORDINATION

- A. Coordinate Contractor's Construction Schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 1. Secure time commitments for performing critical elements of the Work from entities involved.
 2. Coordinate each construction activity in the network with other activities, and schedule them in proper sequence.
 3. Include submittal deadlines in the Contractor's Construction Schedule.

1.7 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.
 1. Use Microsoft Project, Primavera or Meridian Prolog for current Windows operating system.
- B. Format: Provide both PDF and native computer format.
- C. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting, using CPM scheduling.
 1. In-House Option: Owner may waive requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications for Owner/Architect approval.
 2. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.
- D. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.

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1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- E. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
 2. Temporary Facilities: Indicate start and completion dates for the following as applicable:
 - a. Securing of approvals and permits required for performance of the Work.
 - b. Temporary facilities.
 - c. Construction of mock-ups, prototypes and samples.
 - d. Owner interfaces and furnishing of items.
 - e. Interfaces with Separate Contracts.
 - f. Regulatory agency approvals.
 - g. Punch list.
 3. Procurement Activities: Include procurement process activities for the following long lead-time 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.
 4. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
 5. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
 6. Commissioning Time: Include no fewer than 15 days for commissioning.
 7. 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.
 8. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and Final Completion.
- F. 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 under More Than One Contract: Include a separate activity for each contract.
 3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 6. 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.
7. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
- a. Structural completion.
 - b. Temporary enclosure and space conditioning.
 - c. Permanent space enclosure.
 - d. Completion of mechanical installation.
 - e. Completion of electrical installation.
 - f. Substantial Completion.
- G. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion, and the following interim milestones:
1. Temporary enclosure and space conditioning.
 2. Preinstallation conferences as required in other sections.
- H. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
1. See Section 006100 "Application for Payment" for cost reporting and payment procedures.
- I. 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 Requests for Information.
 3. Rejected or unreturned submittals.
 4. Notations on returned submittals.
 5. Pending modifications affecting the Work and the Contract Time.
- J. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

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1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 3. As the Work progresses, indicate Final Completion percentage for each activity.
- K. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.
- L. Distribution: Distribute copies of approved schedule to Architect Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.8 STARTUP CONSTRUCTION SCHEDULE

- A. 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. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

1.9 CPM SCHEDULE REQUIREMENTS

- A. Prepare network diagrams using AON (activity-on-node) format.
- B. Startup Network Diagram: Submit diagram within 14 days of date established for the Notice to Proceed. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.
- C. CPM Schedule: Prepare Contractor's Construction Schedule using a time-scaled CPM network analysis diagram for the Work.
1. Develop network diagram in sufficient time to submit CPM schedule, so it can be accepted for use no later than 60 days after date established for the Notice to Proceed.

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- a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates.
 2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
 3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
 4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule to coordinate with the Contract Time.
- D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup 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 inspection.
 - j. Commissioning.
 - k. Punch list and Final Completion.
 - l. 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. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
 4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
 - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
- E. 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.

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- F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
1. Contractor or subcontractor and the Work or activity.
 2. Description of activity.
 3. Main 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.
 8. Total float or slack time.
 9. Average size of workforce.
 10. Dollar value of activity (coordinated with the schedule of values).
- G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
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.

1.10 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
1. List of subcontractors at Project site.
 2. List of separate contractors at Project site.
 3. Approximate count of personnel at Project site.
 4. Equipment at Project site.
 5. Material deliveries.
 6. High and low temperatures and general weather conditions, including presence of rain or snow.
 7. Testing and inspection.
 8. Accidents.
 9. Meetings and significant decisions.
 10. Unusual events.
 11. Stoppages, delays, shortages, and losses.
 12. Meter readings and similar recordings.
 13. Emergency procedures.
 14. Orders and requests of authorities having jurisdiction.
 15. Change Orders received and implemented.
 16. Construction Change Directives received and implemented.
 17. Services connected and disconnected.
 18. Equipment or system tests and startups.

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19. Partial completions and occupancies.
 20. Substantial Completions authorized.
- B. Site Condition Reports: Immediately on discovery of a difference between site 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.
- C. Unusual Event Reports: 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, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.
1. Submit unusual event reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

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 the following:
 - 1. Preconstruction photographs.
 - 2. Concealed Work photographs.
 - 3. Periodic construction photographs.
 - 4. Final Completion construction photographs.
- B. Related Requirements:
 - 1. Section 017000 "Contract Closeout" for submitting photographic documentation as Project Record Documents at Project closeout.
 - 2. Section 024119 "Selective Demolition" for photographic documentation before selective demolition operations commence.

1.3 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph.
- B. Digital Photographs: Submit image files within three days of taking photographs.
 - 1. Submit photos on CD-ROM or thumb-drive. Include copy of key plan indicating each photograph's location and direction.

1.4 QUALITY ASSURANCE

- A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.

1.5 FORMATS AND MEDIA

- A. Digital Photographs: Provide color images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels, and at an image resolution of not less

than 3200 by 2400 pixels, and with vibration-reduction technology. Use flash in low light levels or backlit conditions.

- B. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
- C. Metadata: Record accurate date and time from camera.
- D. File Names: Name media files with Project area and sequential numbering suffix.

1.6 CONSTRUCTION PHOTOGRAPHS

- A. Photographer: Engage a qualified photographer to take construction photographs.
- B. General: Take photographs with maximum depth of field and in focus.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- C. Preconstruction Photographs: Before commencement of the Work, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points.
 - 1. Take 10 photographs to show existing conditions adjacent to property before starting the Work.
 - 2. Take 20 photographs of existing buildings either on or adjoining property, to accurately record physical conditions at start of construction.
 - 3. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- D. Concealed Work Photographs: Before proceeding with installing work that will conceal other work, take photographs sufficient in number, with annotated descriptions, to record nature and location of concealed Work, including, but not limited to, the following:
 - 1. Piping.
 - 2. Electrical conduit.
 - 3. Ductwork.
- E. Periodic Construction Photographs: Take 20 photographs, monthly, coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.
- F. Final Completion Construction Photographs: Take 20 photographs after date of Substantial Completion for submission as Project Record Documents.
- G. Additional Photographs: Architect may request photographs in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in the Contract Sum.
 - 1. Three days' notice will be given, where feasible.
 - 2. In emergency situations, take additional photographs within 24 hours of request.

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3. Circumstances that could require additional photographs include, but are not limited to, the following:
 - a. Special events planned at Project site.
 - b. Immediate follow-up when on-site events result in construction damage or losses.
 - c. Extra record photographs at time of final acceptance.
 - d. Owner's request for special publicity photographs.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013233

**SECTION 013400
SHOP DRAWINGS, PRODUCT DATA AND SAMPLES**

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Work included: Make submittals required by the Contract Documents and revise and resubmit as necessary to establish compliance with the specified requirements.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to General Conditions, Supplementary Conditions and Sections in Division 1 of these specifications.
 - 2. Individual requirements for submittals also may be described in pertinent sections of these specifications.
- C. Work not included:
 - 1. Un-required submittals will not be reviewed by the Architect.
 - 2. The Contractor may require his subcontractors to provide drawings, setting diagrams, and similar information to help coordinate the work, but such data shall remain between the Contractor and his subcontractors and will not be reviewed by the Architect.

1.2 QUALITY ASSURANCE

- A. Coordination of submittals:
 - 1. Prior to each submittal, carefully review and coordinate all aspects of each item being submitted.
 - 2. Verify that each item and the submittal for it conform in all respects with the specified requirements.
 - 3. By affixing the Contractor's signature to each submittal, certify that this coordination has been performed.
 - 4. Review and coordinate each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.
- B. Completeness of submittal:
 - 1. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Architect the services, materials, and equipment Contractor proposes to provide and to enable Architect to review the information for the limited purposes.

2. Determine and verify all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

C. "Or equal":

1. Where the phrase "or equal" occurs in the Contract Documents, do not assume that the materials, equipment or methods will be considered as equal unless the item has been specifically so approved for this Work by the Architect.
2. The decision of the Architect shall be final.

D. The Architect shall assume that no shop drawing or related submittal comprises a variation unless the Contractor advises the Architect otherwise in writing.

1.3 SUBMITTALS

A. Within 10 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. Schedule for submittals including specification section, type or submittal and submittal date. Failure to provide may cause delay in processing pay applications.
2. Construction schedule.
3. Schedule of partial payment request.

B. Make submittals of shop drawings, samples, substitution requests and other items in accordance with the provisions of this Section.

PART 2 – PRODUCTS

2.1 SHOP DRAWINGS

A. Scale and measurements: Make shop drawings accurately to a scale sufficiently large to show all pertinent aspects of the item and its method of connection to the Work.

B. Large prints (11" x 17" or larger):

1. Submit shop drawings in the form of a PDF.

C. Manufacturer's literature:

1. Where contents of submitted literature from manufacturers include data not pertinent to the submittal, clearly show which portions of the contents are being submitted for review.
2. Cross out or strikethrough all data not pertinent to the submittal.

D. Number of copies: Submit electronically via PDF.

E. Do not begin fabrication of equipment or materials prior to Architect's approval of shop drawings.

2.2 VARIATIONS

- A. With each submittal, provide specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Architect for review and approval of each such variation.
- B. Provide an explanation of why the item(s) submitted are considered to be equal to the item(s) specified.
- C. Failure to submit a written notice will result in rejection of the submittal.

2.3 SAMPLES

- A. Provide sample or samples identical to the precise article proposed to be provided. Identify as described under "Identification of submittals" below.
 - 1. Unless otherwise specified, submit samples in the quantity which is required to be returned, plus one which will be retained by the Architect.
 - 2. By prearrangement in specific cases, a single sample may be submitted for review and, when approved, when installed in the work at a location agreed upon by the Architect.

2.4 COLORS AND PATTERNS

- A. Unless the precise color and pattern is specifically called out in the Contract Documents, and whenever a choice of color or pattern is available to the specified products, submit accurate color and pattern charts to the Architect for selection.

PART 3 – EXECUTION

3.1 CONTRACTOR'S REVIEW OF SUBMITTALS

- A. Before submitting a shop drawing or any related material, Contractor shall:
 - 1. Determine and verify all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto.
 - 2. Determine and verify the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the work.
 - 3. Review each such submission for conformance with the means, methods, techniques, sequences, and operations of construction, and safety precautions and programs incidental thereto, all of which are the sole responsibility of Contractor.
 - 4. Approve each such submission before submitting it.
 - 5. Stamp and sign each such submission before submitting it. Submittals received by the Architect not stamped by the Contractor will be rejected and additional costs by the Architect may be withheld from Contractor payment.

- B. Shop drawings and related materials shall be returned with comments provided that each submission has been specified and is stamped by the Contractor.
- C. Shop drawings or material not specified or which have not been approved by the Contractor shall be returned without comment.
- D. Contractor is to utilize the following stamp on all shop drawing submittals:

This shop drawing has been reviewed by (Contractor) and approved with respect to the means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incidental thereto. (Contractor) also warrants that this shop drawing complies with contract documents and comprises no variations thereto.

By:

Date:

- E. Architect's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of the General Conditions and Architect has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Architect's review and approval shall not relieve Contractor from responsibility for complying with the requirements of the General Conditions.

3.2 IDENTIFICATION OF SUBMITTALS

- A. Consecutively number all submittals
 - 1. When material is resubmitted for any reason, transmit under a new letter of transmittal and with a new transmittal number.
 - 2. On re-submittals, cite the original submittal number for reference.
- B. Accompany each submittal with a letter of transmittal showing all information required for identification and checking.
- C. On at least the first page of each submittal, and elsewhere as required for positive identification, show the submittal number in which the item was included.
- D. Maintain an accurate submittal log for the duration of the work, showing current status of all submittals at all times. Make the submittal log available to the Architect for his review upon request.

3.3 GROUPING OF SUBMITTALS

- A. Unless otherwise specified, make submittals in groups containing all associated items to assure that information is available for checking each item when it is received.

1. Partial submittals may be rejected as not complying with the provisions of the Contract.
2. The Contractor may be held liable for delays so occasioned.

3.4 TIMING OF SUBMITTALS

- A. Make submittals far enough in advance of scheduled dates for installation to provide time required for reviews, for securing necessary approvals, for possible revisions and re-submittals, and for placing orders and securing delivery.
- B. In scheduling, allow at least twenty (20) days for review by the Architect following his receipt of the submittal.

3.5 RESUBMITTAL SCHEDULE

- A. For submittals marked “Revise and Re-Submit”, “Submit Specified Item”, or “Rejected”, re-submittal shall be within ten (10) days of the review data shown on the Architect’s shop drawing review stamp.

3.6 ARCHITECT’S REVIEW

- A. Review by the Architect does not relieve the Contractor from responsibility for errors which may exist in the submitted data.
- B. Architect will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Architect.
- C. Architect’s review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given to the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
- D. Architect’s review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto.
- E. The review and approval of a separate item as such will not indicate approval of the assembly in which the items functions.
- F. Revisions:
 1. Make revisions required by the Architect.
 2. If the Contractor considers any required revision to be a change, he/she shall so notify the Architect as provided for in the General Conditions.
 3. Make only those revisions directed or approved by the Architect.
- G. Submittals which have been reviewed and returned to the Contractor marked “Revise and Re-submit” or “Rejected” and which are re-submitted and not in an

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approvable state, will not be reviewed a third time unless payment for the third and any subsequent review is by the Contractor. The costs for review shall be equal to the Architect's charges to the Owner under the terms of the Architectural Agreement with the owner.

(END OF SECTION)

**SECTION 014000
QUALITY REQUIREMENTS**

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Work included: Provide workforce and equipment as are required for proper completion of the Work including, but not necessarily limited to:
 - 1. All work described in the Project Manual and Plans
 - 2. Additional work mutually agreed upon by the Owner and the Contractor
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Additional requirements for quality requirements also may be described in other Sections of these Specifications. These include but are not limited to the following:
- C. Work by others:
 - 1. An inspection and testing agency, approved by the Owner, shall be retained by the Owner to perform IBC Chapter 17 tests and inspections. See ‘S’ sheets for required CH. 17 schedule.
 - 2. The performance or lack of performance of such tests and inspections shall not be construed as granting relief from the requirements of these specifications or the other contract documents

1.2 QUALITY ASSURANCE

- A. The Contractor shall have a written Quality Control Program and Inspection Procedures document that shall provide details of how compliance with the requirements of these specifications and the shop and placement drawings shall be achieved.
- B. The Contractor shall use an adequate number of skilled personnel, who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specification requirements and the methods needed for the proper performance of the work of this Specification.
- C. The Contractor shall utilize equipment adequate in type, number, size and capacity to accomplish the work of this Specification in a safe and timely manner.
- D. The Owner reserves the right to make inspections at any time at the source of supply of materials, at the place of preparation of materials, and during execution of all work.

1.3 SUBMITTALS

- A. When required, an excavation Safety Plan shall be submitted for review and approval by the Engineer no less than 5 days before the scheduled date for start of excavation operations. The plan shall indicate the systems, methods, and techniques to be used to ensure that excavation sidewalls will be properly guarded to protect personnel, and existing facilities and structures in the vicinity of the work.
- B. When required, a Water Control Plan shall be submitted for review and approval no less than 5 days before the scheduled date for the start of earthwork operations. The plan shall indicate the methods and techniques to be used for control of water (both surface runoff and ground water) during Work.

1.4 EXISTING SITE CONDITIONS

- A. Before starting work the Contractor shall thoroughly examine the site to ascertain conditions under which the work must be performed.
- B. The Contractor is responsible for familiarizing himself with the existing site conditions and be prepared to adequately care for and safeguard himself, his workers, and the Owner from damage.
- C. Existing Geotechnical Conditions if available, a copy of the report is included in the contract documents. The information contained in the report shall not be construed as a guarantee of the depth, extent, or character of materials actually present.
- D. Existing Utilities
 - 1. There now may exist in the construction area potable and non-potable water distribution systems, wastewater and stormwater collection systems, natural gas and electrical power distribution systems, telecommunication systems and other utilities.
 - 2. These utilities are both underground and overhead and their location, as shown on the plans, is approximate and is for information purposes only. In addition other utilities not shown on the plans may exist.
 - 3. The South Carolina Underground Utility Damage Prevention Act (S.C. Ann Code, 58-35-10, CT-SEQ, Supp. 1978) requires persons to ascertain the location of underground utilities, prior to excavation and demolition. The Act also requires such persons to give timely notice of intent to excavate or demolish prior to commencing such operations.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION

3.1 PRE-CONSTRUCTION EXAMINATION

- A. General
- B. Before starting work the Contractor shall thoroughly examine the site to ascertain conditions under which the work must be performed.
- C. Existing Facilities to Remain
- D. Take measures to protect existing facilities within the work area that are not designated for removal from being damaged by the work.
- E. Survey Monuments
 - 1. Locate and protect from damage any survey monuments within the work area. Properly relocate or witness any monument that must be disturbed by the work. After completion of the work, restore monument witnesses.
- F. Immediately notify Architect of any discrepancies between the plans and the actual site conditions, or of any obstruction that will prevent or adversely affect the contractor's ability to complete the Work.

3.2 EXISTING OR COMPLETED UTILITIES

- A. Unless shown to be removed protect active utility lines shown on the drawings or otherwise made known to the Contractor.
- B. Use care in moving machinery and equipment over existing or newly installed pipes and utilities during construction so as not to cause damage to completed work.
- C. Do not use power-driven equipment to excavate closer than 2 feet from any existing utility or structure. For work immediately adjacent to, or for excavation exposing an existing utility or other structure, use manual or light equipment excavation methods until the obstruction is cleared.
- D. Support uncovered pipes and other existing work affected by the excavation until they are properly supported by backfill.
- E. Take the necessary precautions to maintain services provided by all active utility lines in the construction area. If service is interrupted as a result of the Work, immediately restore service by repairing the damaged utility.
- F. If during construction active utility lines not shown on the drawings or otherwise made known to the Contractor are encountered or if active utility lines will interfere with the work, immediately notify the Engineer

(END OF SECTION)

Statement of Special Inspections

Project: Bobby Alford Pavilion Permit Number: 1222

Project Location: _____

Owner/Address: _____ City _____ Zip _____

Registered Design Professional
In Responsible Charge: Christopher Gilger

Address: 1226 Yeamans Hall Rd

City: Hanahan State: SC Zip: 29410 Phone: 843-566-0161

E-mail: chrisg@adcengineering.com

This statement of Special Inspections attached is submitted as a condition for permit issuance in accordance with Section 1704 of the 2018 International Building Code. It includes a Schedule of Special Inspection Services applicable to the above referenced project as well as the identity of the individuals, agencies, or firms (completed by others) intended to be retained for conducting these inspections. The Special Inspection Coordinator (Registered Design Professional In Charge of Administering Special Inspections) shall keep records of all inspections and shall furnish interim inspection reports to the Engineer of Record (Registered Design Professional in Responsible Charge of Construction Documents) at a frequency agreed upon by the permit applicant and Building Official prior to the start of work. Discrepancies shall be brought to the immediate attention of the Contractor and the Engineer of Record for correction. If the discrepancies are not corrected, the Special Inspection Coordinator shall bring the discrepancies to the attention of the Building Official and the Engineer of Record prior to the completion of that phase of work. The Special Inspection Coordinator shall submit a Final Report of Special Inspections to the building official at the conclusion of the project and before a certificate of occupancy will be issued.

Statement of Special Inspections encompass the following disciplines:

- Structural Mechanical/Electrical/Plumbing
 Architectural Other: _____

Prepared by:

Christopher Gilger, PE

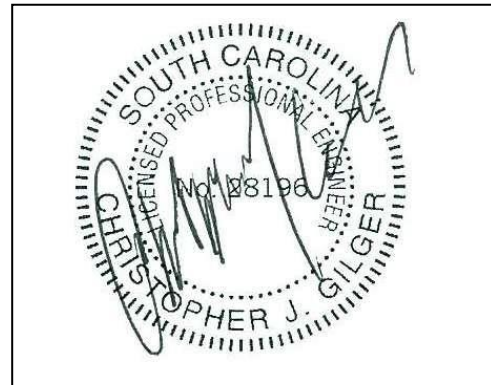
Type or Print Name



Signature

December 20, 2022

Date



Preparer's Seal and Signature Required

To be filled out by the jurisdiction and returned to applicant
Building Official's Acceptance of Special Inspections

Frequency of Interim reports: Monthly Bi-Monthly Upon Completion Per Attached Schedule

Signature

Date

TMS

Permit Number

Schedule of Inspection and Testing Agencies

This Statement of Special Inspections includes the following building systems:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Soils and Foundations | <input type="checkbox"/> Wood Construction |
| <input type="checkbox"/> Cast-in-Place Concrete | <input checked="" type="checkbox"/> Architectural Components |
| <input type="checkbox"/> Precast Concrete | <input type="checkbox"/> Mechanical & Electrical Systems |
| <input checked="" type="checkbox"/> Masonry | <input type="checkbox"/> Storage Racks |
| <input checked="" type="checkbox"/> Structural Steel | <input type="checkbox"/> Spray Fire Resistant Material |
| <input checked="" type="checkbox"/> Cold-Formed Steel Framing | <input checked="" type="checkbox"/> Special Cases |

Special Inspection Agencies	Firm	Address, Telephone, e-mail
1. Special Inspection Coordinator (Registered Professional in Responsible Charge of Administering Special Inspections)		
2. Inspector		
3. Inspector		
4. Testing Agency		
5. Testing Agency		
6. Other		

Note: The inspectors and testing agencies shall be engaged by the Owner or the Owner's Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official, prior to commencing work.

Qualifications of Inspectors and Testing Technicians

The qualifications of all personnel performing Special Inspection and testing activities are subject to the approval of the Building Official and shall be in accordance with the building code or any particular requirements of the specifications or material specific referenced standards. The credentials of all Inspectors and testing technicians shall be provided if requested.

Special Inspection Definitions

Continuous Special Inspection - Special inspection by the special inspector who is present when and where the work to be inspected is being performed.

Periodic Special Inspection - Special inspection by the special inspector who is intermittently present where the work to be inspected has been or is being performed. Unless noted otherwise 100% of the work designated for inspection shall be inspected.

MATERIAL / ACTIVITY	SCOPE OF SERVICE
1704.2.5 Special Inspection of Fabricated Items	
<u>Structural Steel Fabrication</u> : Verify Fabrication/Quality Control Procedures	Verify Steel Fabrication plant is AISC certified

MATERIAL / ACTIVITY	SCOPE OF SERVICE
1705.1.1 Special Cases	
Post Installed Anchors	
Installer Qualifications	Review installer training records to confirm they have received manufacturer training per the contract documents
Anchor Installation	<p>Continuously inspect complete process of anchor installation in accordance with requirements of approved ICC ESR report. As minimum review installation procedures including drill bit type, drilling methods, hole preparation and cleaning, spacing, edge distance, embedment depth, adhesive installation, rod installation, curing time, and anchor torque to ensure compliance with manufacturer's instructions and construction documents.</p> <p>(All anchor holes must be inspected during drilling, all anchor holes must be inspected prior to anchor installation, all anchors shall be inspected at final application of required torque)</p>

MATERIAL / ACTIVITY	SCOPE OF SERVICE
1705.1.1 Special Cases (Continued)	
Thermal Monitoring of Mass Concrete (Continued)	
Install Ambient Surface Temperature Sensors	<p>Place ambient exposure surface temperature sensors (linked to data collection system), prior to pouring concrete, mounted on interior rebar, with quantity and placement as follows:</p> <p>Location: All ambient exposure surface temperature sensors shall be installed within 3 in. from the ambient exposure surface. The ambient exposure sensor shall be located at the plan center of the monitored mass concrete element. Additional sensors required due to the rate of installation shall be placed at corner(s) and then subsequently edge(s) furthest from the plan center of the monitored mass concrete element. Redundant (back-up) sensors shall be installed at (within 6 in. of) of each of the surface sensors. Exact locations shall be proposed by concrete contractor and approved by the special inspector and EOR.</p> <p>Rate of Installation: One interior sensor location (including one primary and one redundant sensor) for each 400 sq. ft. of top or ambient exposure surface area for each mass concrete element to be monitored.</p> <p>Minimum Quantity: Provide not less than one sensor (and associated backup sensor) for each monitored mass concrete element placement less than 20 cubic yards. Provide at least two sensors (and associated back up sensors) when the monitored mass concrete element pour is greater than 30 cu yds.</p>

MATERIAL / ACTIVITY	SCOPE OF SERVICE
1705.2.1 Structural Steel	
Review fabricator's source quality assurance inspection and testing report submittals	<p>Periodically review fabricator's source quality assurance inspection and test reports to ensure all inspection and testing is being completed as required and appropriate standards are being met. (100% rate for all source quality control report submittals.)</p>
Conduct Inspections prior to field welding in accordance with AISC 360 Table N5.4-1	<p>Periodically confirm welder qualification records and continuity records are current</p> <p>Periodically confirm that welding procedure specifications (WPS) are available and on site for type and configuration of weld being completed. (100% rate for each type and configuration of weld immediately prior to the weld being completed)</p> <p>Periodically confirm manufacturers certifications are available and on site for all welding consumables. (100% rate for each type of consumable immediately prior to initial use of each consumable)</p> <p>Periodically inspect material identification (type/grade)</p> <p>Periodically confirm that a welder identification system is in place for field welding and that the system is being used (confirm system is in place prior to welding and 100% confirmation of system usage during welding inspection)</p> <p>Periodically inspect fit-up of groove welds including joint preparation, dimensions, cleanliness, tacking, backing type and backing fit (100% inspection rate of all groove weld joints immediately prior to completing weld)</p> <p>Periodically inspect fit-up of groove welds of HSS T-, Y-, and K- joints without backing (including joint geometry) for: joint preparation, dimensions, cleanliness, and tacking. (100% inspection rate of all groove weld joints immediately prior to completing weld)</p> <p>Periodically inspect configuration and finish of weld access holes (100% inspection rate of all weld access holes immediately prior to completing associated weld)</p> <p>Periodically inspect fit-up of fillet welds including dimensions, cleanliness, and tacking (Random inspection rate for general conformance with a minimum rate of once weekly during steel erection)</p>

MATERIAL / ACTIVITY	SCOPE OF SERVICE
1705.2.1 Structural Steel (Continued)	
<p>Conduct inspections during field welding in accordance with AISC 360-10 Table N5.4-2</p>	<p>Periodically confirm that welders are qualified for welds which they are completing and they possess a valid welding certificate for that weld type and configuration (Random inspection rate for general conformance with a minimum rate of once weekly during welding operations)</p> <p>Periodically inspect control and handling of welding consumables including packaging and exposure control. (Random inspection rate for general conformance with a minimum rate of once weekly during welding operations)</p> <p>Periodically confirm that no welding is occurring over cracked tack welds. (Random inspection rate for general conformance with a minimum rate of once weekly during welding operations)</p> <p>Periodically confirm that environmental conditions are acceptable including wind speed limits, precipitation and temperature. (Random inspection rate for general conformance with a minimum rate of once weekly during welding operations)</p> <p>Periodically/Continuously confirm that weld procedure specifications (WPS's) are being followed including settlings of welding equipment, travel speed, selected welding materials, shielding gas type and flow rate, preheat applied, interpass temperature maintained, and proper position. (Continuously inspect for groove welds, multi-pass welds, or welds greater than 5/16". Periodically inspect all other welds a minimum rate of once weekly during welding operations)</p> <p>Periodically/Continuously confirm welding techniques including interpass and final cleaning, each pass with profile limitations, each pass meets quality requirements. (Continuously inspect for groove welds, multi-pass welds, or welds greater than 5/16". Periodically inspect all other welds a minimum rate of once weekly during welding operations)</p> <p>Periodically inspect placement and installation of steel headed stud anchors. (Random inspection rate for general conformance with a minimum rate of once daily during welding operations)</p>

MATERIAL / ACTIVITY	SCOPE OF SERVICE
1705.2.1 Structural Steel (Continued)	
<p>Conduct inspections after field welding in accordance with AISC 360-10 Table N5.4-3</p>	<p>Periodically confirm that welds have been cleaned. (100% inspection rate with a minimum rate of once weekly during welding operations)</p> <p>Periodically confirm weld size, length and location. (100% inspection rate with a minimum rate of once weekly during welding operations)</p> <p>Periodically confirm weld meets visual acceptance criteria including crack prohibition, weld/base-metal fusion, crater cross section, weld profiles, weld size, undercut, and porosity. (100% inspection rate with a minimum rate of once weekly during welding operations)</p> <p>Periodically inspect arc strikes. (100% inspection rate with a minimum rate of once weekly during welding operations)</p> <p>Periodically inspect k-area for cracks within 3" of welds when welding has been performed in k-area. (100% inspection rate with a minimum rate of once weekly during welding operations)</p> <p>Periodically inspect weld access holes in rolled heavy shapes and built-up heavy shapes and inspect those weld access holes for cracks. (100% inspection rate with a minimum rate of once weekly during welding operations)</p> <p>Periodically confirm backing and weld tabs have been removed where required. (100% inspection rate with a minimum rate of once weekly during welding operations)</p>
<p>(Continued) Conduct inspections after field welding in accordance with AISC 360-10 Table N5.4-3</p>	<p>Periodically inspect repair activities. (100% inspection rate with a minimum rate of once weekly during welding operations)</p> <p>Periodically document acceptance or rejection of welded joint or member. (100% inspection rate with a minimum rate of once weekly during welding operations)</p> <p>Periodically inspect no prohibited welds have been added without the approval of the EOR. (100% inspection rate with a minimum rate of once weekly during welding operations)</p>
<p>Nondestructive testing of field welded joints</p>	<p>Periodically ultrasonically test all complete joint penetration welds (CJP) in accordance with AWS D1.1 (100% inspection rate)</p>

MATERIAL / ACTIVITY	SCOPE OF SERVICE
1705.2.1 Structural Steel (Continued)	
<p>Conduct Inspections prior to high strength bolting in accordance with AISC 360-10 Table N5.6-1</p>	<p>Periodically confirm manufacturers certifications are available each type of fastener material. (100% rate for each type of fastener material immediately prior to initial use of each type of material)</p> <p>Periodically confirm fasteners are marked in accordance with ASTM Standard. (Random inspection rate for general conformance with a minimum rate of once weekly during bolting operations)</p> <p>Periodically confirm correct fasteners are selected for the joint detail including grade, type, and bolt length (if threads are to be excluded from shear plane). (100% inspection rate)</p> <p>Periodically/Continuously confirm correct bolting procedure selected for joint detail. (100% inspection rate, continuous inspection for slip critical joints, periodic inspection for all other joints with random inspection with a minimum rate of once weekly during bolting operations)</p> <p>Periodically/Continuously inspect connection elements, including appropriate faying surface condition and hole preparation meet applicable requirements. (continuous inspection for slip critical joints with 100% inspection rate, periodic inspection for all other joints with random inspection with a minimum rate of once weekly during bolting operations)</p> <p>Periodically/Continuously Conduct Preinstallation verification testing by installation personnel and document for fastener assemblies and methods used for slip critical joints. (Periodically, one time per installer for turn of nut, direct tension indicators, or tension controlled bolts. Periodically, once daily for calibrated wrench without match marking)</p> <p>Periodically confirm protected storage provided for bolts, nuts, washers and other fastener components. (Random inspection rate for general conformance with a minimum rate of once weekly during bolting operations)</p>

MATERIAL / ACTIVITY	SCOPE OF SERVICE
1705.2.1 Structural Steel (Continued)	
<p>Conduct Inspections during high strength bolting in accordance with AISC 360-10 Table N5.6-2</p>	<p>Periodically/Continuously confirm fastener assemblies placed in all holes and washers are positioned as required. (100% inspection rate, continuous inspection for slip critical joints, periodic inspection for all other joints with random inspection with a minimum rate of once weekly during bolting operations)</p> <p>Continuously confirm joints are brought to the snug-tight condition prior to pretensioning operation (100% inspection rate, continuous inspection for slip critical joints)</p> <p>Continuously component not turned by the wrench is prevented from rotating (100% inspection rate, continuous inspection for slip critical joints)</p> <p>Periodically/Continuously confirm fasteners are pretensioned in accordance with the RCSC Specification, progressing systematically from the most rigid point toward the free edges (100% inspection rate, continuous inspection for slip critical joints pretensioned with calibrated wrench or turn-of-the-nut without match marking. Periodic inspection for slip critical joints pretensioned with tension controlled bolts, direct tension indicators, or turn-of-the-nut with match marking)</p>
<p>Conduct Inspections after high strength bolting in accordance with AISC 360-10 Table N5.6-3</p>	<p>Periodically document acceptance or rejection of bolted connections. (100% rate with a minimum rate of once weekly during welding operations)</p>
<p>Other inspection Task</p>	<p>Periodically inspect placement of anchor rods and other embedded items prior to concrete/masonry grout placement operations. Confirm diameter, grade, type and length of the anchor rod or embedded item, and the extent or depth of embedment into concrete/masonry grout. (100% inspection rate immediately prior to concrete/masonry grout placement operation)</p> <p>Periodically inspect the steel frame to verify compliance with the details shown on the construction documents including braces, stiffeners, member locations, and proper application of joint details at each connection. (100% inspection rate with a minimum rate of once weekly during steel erection operations)</p>

MATERIAL / ACTIVITY	SCOPE OF SERVICE
1705.2.2 Cold Formed Steel Deck	
<p>Conduct inspections prior to deck placement in accordance with SDI QA/QC-2011 Table 1.1</p>	<p>Periodically verify compliance of materials (deck and all deck accessories) with construction documents, including profiles, material properties, and base metal thickness, (100% inspection rate prior to deck installation)</p> <p>Document acceptance or rejection of deck and deck accessories</p>
<p>Conduct inspections after deck placement in accordance with SDI QA/QC-2011 Table 1.2</p>	<p>Periodically verify compliance of deck and all deck accessories installation with construction documents. (100% inspection rate, with a minimum rate of once weekly during deck installation operations)</p> <p>Periodically verify deck materials are represented by mill certifications that comply with construction documents. (100% inspection rate)</p> <p>Document acceptance or rejection of deck and deck accessories</p>
<p>Conduct inspections prior to welding in accordance with SDI QA/QC-2011 Table 1.3</p>	<p>Periodically confirm that welding procedure specifications (WPS) are available and on site for type and configuration of weld being completed. (100% rate for each type and configuration of weld immediately prior to the weld being completed)</p> <p>Periodically confirm manufacturers certifications are available and on site for all welding consumables. (100% rate for each type of consumable immediately prior to initial use of each consumable)</p> <p>Periodically inspect material identification (type/grade)</p> <p>Periodically inspect welding equipment to insure equipment is functional and is of type required by WPS's</p>

MATERIAL / ACTIVITY	SCOPE OF SERVICE
1705.3 Concrete Construction	
Inspection of reinforcing steel, including placement	<p>Periodically inspect reinforcing steel placement in accordance with contract documents and approved shop drawings to confirm size, spacing, cover, positioning, bends, grade, laps, supports and anchorage. (100% inspection rate immediately prior to placing concrete)</p>
Inspection of anchors cast in concrete	<p>Periodically inspect size, positioning, embedment, and projection of anchor rods is in accordance with contract documents and approved shop drawings. (100% inspection rate immediately prior to placing concrete)</p> <p>Continuously inspect concrete placement and consolidation around anchors. (100% inspection rate during concrete placement)</p>
Inspection of anchors post-installed in hardened concrete members.	<p>Review installer training records to confirm they have received manufacturer training per the contract documents</p> <p>Continuously inspect complete process of anchor installation in accordance with requirements of approved ICC ESR report. As minimum review installation procedures including drill bit type, drilling methods, hole preparation and cleaning, spacing, edge distance, embedment depth, adhesive installation, rod installation, curing time, and anchor torque to ensure compliance with manufacturer's instructions and construction documents. (All anchor holes must be inspected during drilling, all anchor holes must be inspected prior to anchor installation, all anchors shall be inspected at final application of required torque)</p>
Verifying use of required design mix	<p>Periodically review batch tickets to confirm the appropriate approved mix design is being used for the location in which concrete is being placed (100% review rate during concrete placement)</p> <p>Periodically verify that water added at the site does not exceed that allowed by the batch ticket (100% inspection rate during concrete placement)</p>

1705.3 Concrete Construction (Continued)

<p>Sample fresh concrete to fabricate specimens for strength tests, perform fresh unit weight density, slump and air content tests, and determine the temperature of concrete</p>	<p>Continuously test concrete compressive strength (ASTM C31 & C39), fresh unit weight density (ASTM C138), slump (ASTM C143), air-content (ASTM C231 or C173) and temperature (ASTM C1064).</p> <p>Samples for preparing unit weight density specimens and measuring air content shall be obtained at the point of placement.</p> <p>Slump measurements are for reference only and shall not be a basis of rejection.</p> <p>Threshold for fresh unit weight density shall be in accordance with approved mix design submittals</p> <p>(Frequency of sampling and testing as required by section 21.16 of ACI 318)</p>
<p>Inspection of concrete for proper application techniques</p>	<p>Continuously inspect concrete placement techniques to confirm compliance with section 26.5 of ACI 318.</p>
<p>Inspection for maintenance of specified curing temperatures and techniques</p>	<p>Periodically inspect curing temperatures and techniques to insure compliance with contract documents and sections 26.5.3, 26.5.4 and 26.5.5 of ACI 318-14</p>

MATERIAL / ACTIVITY	SCOPE OF SERVICE
1705.4 Masonry Construction	
Verify compliance with approved submittals	<p>Periodically review batch tickets to confirm the appropriate approved grout mix design is being used. (100% review rate during grout placement)</p> <p>Periodically review mortar materials to confirm compliance with approved submittals. (A minimum of once weekly during masonry construction)</p>
Verify proportions of site prepared mortar	<p>Periodically inspect proportioning, mixing and re-tempering of mortar. (A minimum of once daily during masonry construction)</p>
Inspect construction of mortar joints	<p>Periodically inspect construction of mortar joints including tooling and filling of head joints. (100% inspection rate a minimum of once daily during masonry construction)</p>
Inspect location of reinforcement and connectors	<p>Periodically inspect placement, positioning and lapping of reinforcing steel (100% inspection rate a minimum of once daily during masonry construction)</p> <p>Periodically inspect size, grade and type of reinforcing. (100% inspection rate a minimum of once daily during masonry construction)</p> <p>Continuously inspect placement positioning and lapping of joint reinforcement. (100% Inspection rate – inspector shall be in the area of masonry work to monitor installation)</p> <p>Periodically inspect size, grade, type and location of anchor rods and embeds. (100% inspection rate a minimum of once daily during masonry construction)</p>
Inspect Grout Space	<p>Periodically grout spaces to ensure minimum clear grout spaces are achieved, and that grout spaces are free from debris, mortar fins and mortar droppings. Confirm mortar fins and mortar droppings are being manually removed as masonry is constructed. (100% inspection rate a minimum of once daily during masonry construction)</p>
Verify proportions of site prepared grout	<p>Periodically inspect proportioning, mixing and re-tempering of mortar. (A minimum of once daily during masonry construction)</p>
Proportions of site prepared grout	<p>Continuously inspect proportioning and mixing of site batched grout. Confirm acceptable measurement devices are being employed and that the mix proportions are in accordance with approved submittals.</p>
Verify size and location of structural masonry elements	<p>Periodically inspect the size and location of structural elements to comply with contract drawings. (100% inspection rate a minimum of once daily during applicable portion of the work)</p>

MATERIAL / ACTIVITY	SCOPE OF SERVICE
1705.4 Masonry Construction (Continued)	
Verify protection of masonry during hot/cold weather	<p>Periodically inspect protection of masonry during cold weather (temperature below 40 deg F) or hot weather (temperature above 90 deg F)</p> <p>Periodically verify that all wall cavities are protected against precipitation. (100% inspection rate a minimum of once daily during applicable portion of the work)</p>
Verify grout placement complies with code and construction document provisions	<p>Continuously inspect placement, consolidation and reconsolidation of grout. (100% inspection rate)</p> <p>Continuously verify grouting and grout consolidation procedures are in accordance with code and contract document provisions. (100% inspection rate)</p>
Evaluation of grout Strength	<p>Continuously Test compressive strength of grout samples (ASTM C1019). (Sample and test grout for every 5000 sq ft. of wall, but not less than one set of samples for each day's worth of grouting)</p>

MATERIAL / ACTIVITY	SCOPE OF SERVICE
1705.6 Soils	
Verify materials below shallow foundations are adequate to achieve the design bearing capacity	Periodically inspect soils within building footprint for adequate bearing capacity and consistency with the geotechnical report. (100% inspection rate)
Verify excavations are extended to proper depth and have reached proper material	Periodically inspect all footing excavations to ensure they are to proper depth and have reached proper material as indicated on contract documents and/or geotechnical report. (100% inspection rate immediately prior to placement to reinforcing steel for foundations) Periodically inspect all unsuitable material excavations to ensure they are to proper depth and have reached proper material as indicated on contract documents and/or geotechnical report. (100% inspection rate of all areas of unsuitable fill removal immediately prior to placement of fill)
Perform classification testing of compacted fill materials.	Periodically perform testing of fill materials to ensure compliance with contract documents and geotechnical report. Classification and testing shall be in accordance with the Geotechnical report. Where the geotechnical report does not specifically indicate testing, the minimum testing shall be sieve tests (ASTM D422 & D1140) and Standard Proctor tests (ASTM D98). (Testing shall be completed for each source of material, or where obvious changes of properties of fill materials are realized)
Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill	Continuously verify materials for compacted fill to ensure materials have been previously tested and are in compliance with the contract documents and geotechnical report. (100% inspection rate) Periodically test density of each lift of fill within the building footprint to confirm compliance with compaction requirements outlined in the contract documents and geotechnical report. (Where inspection rates are not indicated in the geotechnical report, not less than one test per each lift per 2000 sq ft of fill placed) Continuously verify lift thicknesses are during placement of compacted fill to ensure lift thickness is in compliance with the contract documents and geotechnical report. (100% inspection rate)
Prior to placement of compacted fill, inspect subgrade and verify that the site has been prepared properly.	Periodically inspect subgrade within the building footprint prior to placement of compacted fill to ensure subgrade complies with contract documents and geotechnical report. (100% inspection rate of all areas immediately prior to placement of fill)

MATERIAL / ACTIVITY	SCOPE OF SERVICE
1705.11 Special Inspections for Wind Resistance	
1705.11.2 Cold Formed Steel Light Framed Construction (Main Wind Force Resisting System)	<p>Periodically inspect screw attachment, bolting, anchoring and other fastening of components of the main wind force resisting system. Inspection shall include shear walls, wood diaphragms, drag struts/collectors, chords, braces, shear panels and hold downs. (Random inspection rate for general conformance with a minimum rate of once weekly during construction of seismic force resisting system)</p>
1705.11.3 Wind Resisting Components	<p>Periodically inspect the installation of Roof Cladding is in accordance with approved submittals and manufacturer's installation requirements (Random inspection rate for general conformance with a minimum rate of once weekly during roof cladding installation)</p> <p>Periodically inspect the installation of Wall Cladding is in accordance with approved submittals and manufacturer's installation requirements (Random inspection rate for general conformance with a minimum rate of once weekly during wall cladding installation)</p>

MATERIAL / ACTIVITY	SCOPE OF SERVICE
1705.12 Special Inspections for Seismic Resistance	
<p>1705.12.1 Structural Steel (Seismic Force Resisting System)</p>	<p>Periodically review fabricator's source quality assurance inspection and test reports to ensure all inspection and testing is being completed as required and appropriate standards are being met. (100% rate for all source quality control report submittals.)</p> <p>Special inspector shall submit a written quality assurance plan for field inspection in accordance with AISC 341-16 Chapter J3</p> <p>Inspect field welding of Seismic Force Resisting System Weld Inspection in accordance with AISC 341-16 item J6</p> <p>Inspect field bolting of Seismic Force Resisting System Bolting Inspection in accordance with AISC 341-16 item J7</p> <p>Inspect other steel structure items in accordance with AISC 341-16 item J8</p> <p>Inspect field construction of composite structures in accordance with AISC 341-16 item J9</p> <p>Inspect field fabrication of steel piles in accordance with AISC 341-16 item J10</p>
<p>1705.12.3 Cold Formed Steel Light Frame Construction (Seismic Force Resisting System)</p>	<p>Periodically inspect screw attachment, bolting, anchoring and other fastening of components of the seismic force resisting system. Inspection shall include shear walls, wood diaphragms, drag struts/collectors, chords, braces, shear panels and hold downs. (Random inspection rate for general conformance with a minimum rate of once weekly during construction of seismic force resisting system)</p>
<p>1705.12.5 Architectural Components</p>	<p>Periodically inspect the erection and fastening of exterior wall cladding to ensure compliance with specifications, approved submittals and manufacturer's installation requirements. (Random inspection rate for general conformance with a minimum rate of once weekly during cladding installation)</p> <p>Periodically inspect the erection and fastening of interior and exterior veneers to ensure compliance with specifications, approved submittals and manufacturer's installation requirements. (Random inspection rate for general conformance with a minimum rate of twice weekly during cladding installation)</p> <p>Periodically inspect installation of interior and exterior nonbearing walls to ensure installation is in accordance with construction documents, specifications, and approved shop drawing submittals and/or manufacturer's instructions. Inspection shall include verifications of fastening of wall components and wall anchorages including number, type and spacing of fasteners as well as confirmation that installed connections allow for specified vertical and/or drift deflections. (100% inspection rate with a minimum inspection rate of once weekly during nonbearing wall installation.)</p>

MATERIAL / ACTIVITY	SCOPE OF SERVICE
1705.13 Testing and Qualification for Seismic Resistance	
1705.13.2 Structural Steel (Seismic Force Resisting System)	<p>Special inspector shall submit a written quality assurance plan for field testing in accordance with AISC 341-16 Chapter J</p> <p>Test welding of Seismic Force Resisting System in accordance with AISC 341-10 item J6</p>

**SECTION 015000
TEMPORARY FACILITIES**

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work included: Provide temporary facilities needed for the work including, but not necessarily limited to:

1. Temporary utilities such as heat, water and electricity.
2. Sanitary facilities.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to General Conditions, Supplementary Conditions and Sections in Division 1 of these specifications.
2. Permanent installation and hookup of the various utility lines are described in other Sections.

1.2 PRODUCT HANDLING

A. Maintain temporary facilities in proper and safe condition throughout progress of the work.

PART 2 – PRODUCTS

2.1 UTILITIES

A. Water:

1. Provide necessary temporary piping and water supply and, upon completion of the work, remove such temporary facilities.
2. The Owner shall provide water used in construction. The Contractor shall obtain a construction meter from the Owner.

B. Electricity:

1. Provide necessary temporary wiring and, upon completion of the work remove such temporary facility.
2. Provide and pay for electricity used in construction.

C. Heating: Provide and maintain heat necessary for proper conduction of operations needed in the work.

2.2 FACILITIES

A. Contractor's facilities:

1. Contractor responsible for providing required storage facilities as required to complete the Work.

- a) Any damage to existing site, vegetation fencing, pavement, etc. shall be Contractor's responsibility to restore to pre-project conditions.
 2. Locate only at sites approved by Engineer.
 3. Maintain surroundings in a sanitary and satisfactory manner.
- B. Sanitary facilities:
1. Provide temporary sanitary facilities in the quantity required for use by all personnel.
 2. Maintain in a sanitary condition at all times.
- C. Strictly enforce their use.
- 2.3 PROJECT SIGNS
- A. Provide and maintain a project information sign
1. Project Name
 2. Project Cost
 3. Anticipated Completion date
 4. Contractor
 5. Architect
 6. Owner
 7. Members of City Council
- B. EMPLOYMENT SIGN
- C. SAFETY SIGN, including Contractor's after-hours emergency contact info.

PART 3 – EXECUTION

- 3.1 MAINTENANCE AND REMOVAL
- A. Maintain temporary facilities and controls as long as needed for safe and proper completion of the work.
 - B. Remove such temporary facilities and controls as rapidly as progress of the work will permit, or as directed by the Architect.

(END OF SECTION)

**SECTION 016400
PRODUCT HANDLING**

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Work included: Protect products scheduled for use in the work by means including, but not necessarily limited to, those described in this Section.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to General Conditions, Supplementary Conditions and Sections in Division 1 of these specifications.
 - 2. Additional procedures also may be prescribed in other Sections of these specifications.

1.2 QUALITY ASSURANCE

- A. Include within the Contractor's quality assurance program such procedures as are required to assure full protection of work and materials.

1.3 MANUFACTURE'S RECOMMENDATIONS

- A. Except as otherwise approved by the Architect, determine and comply with manufacture's recommendations on product handling, storage and protection.

1.4 PACKAGING

- A. Deliver products to the job site in their manufacturer's original container, with labels intact and legible.
 - 1. Maintain packaged materials with seals unbroken and labels intact until time of use.
 - 2. Promptly remove damaged material and unsuitable items from the job site and promptly replace with material meeting the specified requirements, at no additional cost to the Owner.
- B. The Architect may reject as non-complying such material and products that do not bear identification satisfactory to the Architect as to manufacture, grade, quality and other pertinent information.

1.5 PROTECTION OF MATERIAL AND WORK

- A. General:
 - 1. Carefully and properly protect all materials of every description, both before and after being used in the Work in accordance with manufacturer's recommendations.
 - 2. Provide any enclosing or special protection from weather deemed necessary by the Architect at no additional cost to the Owner.

- B. Partial payments under the Contract will not relieve the Contractor from responsibility.
 - 1. When materials and work at the site that have been partially paid for are not adequately protected by the Contractor, such materials will be protected by the Owner at the expense of the Contractor and no further partial payment thereon will be made.
 - 2. Maintain finished surfaces clean, unmarred, and suitably protected until accepted by the Owner.
- 1.6 STORAGE
- A. Store all items of equipment, component parts, etc., in accordance with the manufacturer's recommendations or as may otherwise be necessary to prevent damage or deterioration of any sort.
 - B. Electrical and control equipment:
 - 1. Store in a dry area protected from dust and humidity.
 - 2. Equipment can be protected by a weatherproof cover if shipped to the site no more than two (2) weeks prior to installation and energization.
- 1.7 REPAIRS AND REPLACEMENTS
- A. In the event of damage, promptly make replacements and repairs to the approval of the Architect and at no additional cost to the Owner.
 - B. Additional time required to secure replacements and to make repairs will not be considered by the Architect to justify an extension in the contract time or completion.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION (NOT APPLICABLE)

(END OF SECTION)

**SECTION 017000
CONTRACT CLOSEOUT**

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Work included shall be providing compliance with the requirements of the General Conditions of these Specifications for administrative procedures in closing out the project work.
- B. Related work:
 - 1. Documents affecting work of this section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Other requirements for technical services are stated in other sections of these Specifications.
 - 3. Section 006200 – Contractors Affidavit.
 - 4. Section 017200 – Project Record Documents

1.2 SUBSTANTIAL COMPLETION

- A. The Contractor shall notify the Architect that, in his/her opinion, the project is substantially complete. A written statement listing items complete shall be submitted.
- B. Upon receipt of the Contractor's notice, the Architect shall make an observation to determine if substantial completion is provided.
- C. If, in the Architect's opinion, the project is not substantially complete, a written notice to the Contractor shall follow outlining reasons and deficiencies in work that comprised the Architect's decision. The Architect's decision shall be final.

1.3 FINAL OBSERVATION

- A. The Architect will make a final observation for the Contractor after all items noted in the substantial completion observation have been corrected. The Contractor shall notify the Architect in writing when a final observation is needed. Incomplete and/or defective work shall be given to the Contractor by written notice.

1.4 RE-OBSERVATION

- A. Re-observation required due to failure by the Contractor to make previously noted corrections will be performed by the Architect.
- B. Cost for such observations will be due to and payable by the Contractor at a rate equal to charges to the Owner for similar work.
- C. Re-observations will continue until the work is acceptable to the Architect.

1.5 COMPLETION BY CONTRACTOR

- A. When the Architect finds the Contractor's work acceptable, the Contractor shall be given such notice and should proceed with closeout submittals.
- B. Closeout submittals shall contain at least the following:
 - 1. Project record documents.
 - 2. Equipment operation and maintenance manuals and copies of start-up reports.
 - 3. Warranties and bonds.
 - 4. Spare parts and manuals.
 - 5. Evidence of payment and release to liens per General Conditions.
 - 6. Contractors Affidavit.

1.6 FINAL PAYMENT

- A. Final payment to the Contractor will be made upon completion of previous items and others required by these specifications. A final statement shall be forwarded to the Architect. The statement shall address:
 - 1. Previous change orders.
 - 2. Unit Prices.
 - 3. Deductions for uncorrected work.
 - 4. Deductions for liquidated damages.
 - 5. Deductions for re-testing work.
 - 6. Deductions for re-observation.
 - 7. Deductions for shop drawing review.
 - 8. Adjusted contract sum.
 - 9. Previous payments.
 - 10. Amount Due.
- B. When required, the Architect will prepare a contract change order for adjustments not previously made.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION (NOT APPLICABLE)

(END OF SECTION)

**SECTION 017200
PROJECT RECORD DOCUMENTS**

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work included:

1. Throughout progress of the Work, maintain an accurate record of changes in the Contract Documents, as described in Article 3.1 below.
2. Upon completion of the Work, deliver the recorded changes to the Architect marked “AS-BUILTS” which must be signed and sealed by a SC licensed professional land surveyor.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Additional requirements for field engineering also may be described in other Sections of these Specifications. These include but are not limited to the following:

1.2 QUALITY ASSURANCE

- A. Delegate the responsibility for maintenance of Record Documents to one person on the Contractor's staff as approved by the Architect.
- B. Accuracy of records shall be such that future search for items shown on the Project Record Documents may rely reasonably on the information provided under this Section of the Work

1.3 SUBMITTALS

- A. The Architect’s approval of the current status of Project Record Documents may be a prerequisite to the Architect’s approval of requests for progress payment and request for final payment under the Contract.
- B. Prior to submitting each request for progress payment, secure the Architect’s approval of the current status of the Project Record Documents.
- C. Prior to submitting request for final payment, submit the final Project Record Documents to the Architect and secure his approval.

1.4 PRODUCT HANDLING

- A. Maintain the job set of Record Documents completely protected from deterioration and from loss and damage until completion of the Work and transfer to the Architect.
- B. In the event of loss of recorded data, use all means necessary to again secure the data to the Architect approval

1. Such means shall include, if necessary in the opinion of the Architect, removal and replacement of concealing materials.
2. In such case, provide replacements to the standards originally required by the Contract Documents

PART 2 - PRODUCTS

2.1 JOB SET DOCUMENTS

- A. Promptly following receipt of the Owner's Notice to Proceed, secure from the Architect, at no charge to the Contractor, one complete set of all Documents comprising the Contract

PART 3 - EXECUTION

3.1 MAINTENANCE JOB SET DOCUMENTS

- A. Immediately upon receipt of the job set described in above paragraph titled "JOB SET DOCUMENTS", identify each of the Documents with the title, "RECORD DOCUMENTS- JOB SET".
- B. Preservation:
 1. Considering the Contract completion time, the probable number of occasions upon which the job set must be taken out for new entries and for examination, and the conditions under which these activities will be performed, devise a suitable method for protecting the job set to the approval of the Architect.
 2. Do not use the job set for any purpose except entry of new data and for review by the Architect.
 3. Maintain the job set at the site of Work as that site is designated by the Architect.
- C. Field work and making entries on Job Set Drawings:
 1. Use erasable colored pencil, preferably red (not ink or indelible pencil) to delineate changes.
 2. Show by station number location of all fittings, manholes, valves, wyes locations, etc.
 3. Reference all fittings and valves at least to two aboveground items reasonably safe from being relocated and indicate such references on the drawings.
 4. Reference all pipelines from the center of the parallel roadway at least every 100 feet or where changes occur in the direction of the pipeline.
 5. Reference all bores from the center of the roadway to the beginning and end of the casing and ductile iron pipe. Depths of bury must also be provided.

6. Reference all stream crossings and their distance from the center of the parallel roadway and the bridge or other obstruction. A profile of the stream crossing shall also be provided to show the depth of the pipeline under the stream.
7. Field measure and reference all fittings and valves to two aboveground items reasonably safe from being relocated and indicate such references on the drawings.
8. Show location of electrical conduit, pull boxes, etc.
9. Gravity sewers and storm sewers
 - a) Provide survey grade state plane Geographic Information System (G.I.S.) electronic data horizontal coordinates for each structure location.
 - b) Provide ground elevation, top elevation and invert elevations for each structure.
 - c) Comply with Section 01050.1

D. Submittals:

1. Submit "AS-BUILT" set of drawings to the Architect/Engineer signed and sealed by a SC licensed professional land surveyor (PLS)
2. Make any necessary additions as required by the Architect.

(END OF SECTION)

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

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 the following:
 - 1. Disposing of nonhazardous demolition and construction waste.

1.3 DEFINITIONS

- A. Construction Waste: Building, structure, and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.
- C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction, or designated spoil areas on Owner's property.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition and construction waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

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1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within 7 days of date established for the Notice to Proceed.

1.6 QUALITY ASSURANCE

- A. Waste Management Coordinator Qualifications: Experienced firm, or individual employed and assigned by General Contractor, with a record of successful waste management coordination of projects with similar requirements. Superintendent may serve as Waste Management Coordinator.
- B. Regulatory Requirements: Comply with transportation and disposal regulations of authorities having jurisdiction.
- C. Waste Management Conference(s): Conduct as part of mandatory Pre-Construction Conference. Agenda shall include, but not be limited to, the following:
 1. Review and discuss waste management plan including responsibilities of each contractor and waste management coordinator.
 2. Review requirements for documenting quantities of each type of waste and its disposition.
 3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
 4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
 5. Review waste management requirements for each trade.

1.7 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to requirements in this Section. Plan shall consist of waste identification, waste reduction work plan.
- B. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill.
 1. Salvaged Materials: Owner will remove any items they wish to salvage prior to Notice To Proceed.
 2. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
 3. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

PART 2 - PRODUCTS

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
 - 1. Comply with operation, termination, and removal requirements in Section 015000 "Temporary Facilities and Controls."
- B. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged or recycled, remove waste materials from Project site and legally dispose of them in a landfill acceptable to authorities having jurisdiction.
 - 1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.

END OF SECTION 017419

SECTION 017823 - OPERATION AND MAINTENANCE DATA

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 preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory manuals.
 - 2. Emergency manuals.
 - 3. Systems and equipment operation manuals.
 - 4. Systems and equipment maintenance manuals.
 - 5. Product maintenance manuals.
- B. Related Requirements:
 - 1. Section 013400 "Shop Drawings, Product Data, and Samples" for submitting copies of submittals for operation and maintenance manuals.

1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

- A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Architect will comment on whether content of operation and maintenance submittals is acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operation and maintenance manuals in the following format:

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1. Submit on digital media acceptable to Architect. Enable reviewer comments on draft submittals.
- C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect and Commissioning Authority will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.
 1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's and Commissioning Authority's comments and prior to commencing demonstration and training.
- E. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.5 FORMAT OF OPERATION AND MAINTENANCE MANUALS

- A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

1.6 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization of Manuals: 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 the following materials, in the order listed:
 1. Title page.
 2. Table of contents.
 3. Manual contents.
- B. Title Page: Include the following information:

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1. Subject matter included in manual.
 2. Name and address of Project.
 3. Name and address of Owner.
 4. Date of submittal.
 5. Name and contact information for Contractor.
 6. Name and contact information for Construction Manager.
 7. Name and contact information for Architect.
 8. Name and contact information for Commissioning Authority.
 9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 10. 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.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."
- ### 1.7 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY MANUAL
- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals. List items and their location to facilitate ready access to desired information. Include the following:
1. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
 2. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
 3. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- ### 1.8 EMERGENCY MANUALS
- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
 2. Emergency instructions.
 3. Emergency procedures.
- C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
1. Fire.
 2. Flood.
 3. Gas leak.
 4. Water leak.
 5. Power failure.
 6. Water outage.
 7. System, subsystem, or equipment failure.
 8. Chemical release or spill.
- D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- E. Emergency Procedures: Include the following, as applicable:
1. Instructions on stopping.
 2. Shutdown instructions for each type of emergency.
 3. Operating instructions for conditions outside normal operating limits.
 4. Required sequences for electric or electronic systems.
 5. Special operating instructions and procedures.

1.9 SYSTEMS AND EQUIPMENT OPERATION MANUALS

- A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.
1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 2. Performance and design criteria if Contractor has delegated design responsibility.
 3. Operating standards.

4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

C. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
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.

D. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

F. Piped Systems: Diagram piping as installed, and identify color coding where required for identification.

1.10 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.

2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- B. 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 warranties and bonds as described below.
- C. 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 and drawing or schedule designation or identifier where applicable.
- D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:
1. Standard maintenance instructions and bulletins; 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.
 - a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 3. Identification and nomenclature of parts and components.
 4. List of items recommended to be stocked as spare parts.
- E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
1. Test and inspection instructions.
 2. Troubleshooting guide.
 3. Precautions against improper maintenance.
 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 5. Aligning, adjusting, and checking instructions.
 6. Demonstration and training video recording, if available.
- 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.
1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.

2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
 - 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.
 1. Include procedures to follow and required notifications for warranty claims.
 - J. 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 maintenance manuals.
- 1.11 PRODUCT MAINTENANCE MANUALS
- 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. 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.
 - C. 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 and drawing or schedule designation or identifier where applicable.
 - D. 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.
 - E. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 1. Inspection procedures.
 2. Types of cleaning agents to be used and methods of cleaning.

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3. List of cleaning agents and methods of cleaning detrimental to product.
 4. Schedule for routine cleaning and maintenance.
 5. Repair instructions.
- F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017823

SECTION 024119 - SELECTIVE DEMOLITION

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. Demolition and removal of selected portions of building or structure.
- 2. Demolition and removal of selected site elements.

B. Related Requirements:

- 1. See section 003126 "Existing Hazardous Material Information" for hazardous materials reports and abatement requirements.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.
- E. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items

of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 PREINSTALLATION MEETINGS

A. Predemolition Conference: Conduct conference at Project site.

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For refrigerant recovery technician.

B. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and , for noise control. Indicate proposed locations and construction of barriers.

C. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's other tenants' on-site and adjacent buildings operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of stairs.
5. Coordination of Owner's continuing occupancy of portions of existing buildings.

D. Predemolition Photographs: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by demolition operations. Comply with Section 013233 "Photographic Documentation." Submit before Work begins.

E. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

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1.7 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.

1.8 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.9 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
 - 1. Before selective demolition, Owner will remove the following items:
 - a. Furnishings or other equipment in the areas of the Work.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Storage or sale of removed items or materials on-site is not permitted.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction. Coordinate haul routes with Charleston Department of Traffic and Transportation.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

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- B. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- C. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.
 - 1. Comply with requirements specified in Section 013233 "Photographic Documentation."
 - 2. Inventory and record the condition of items to be removed and salvaged. Provide photographs of conditions that might be misconstrued as damage caused by salvage operations.
 - 3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 PREPARATION

- A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Arrange to shut off utilities with utility companies.
 - 2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 3. Disconnect, demolish, and remove plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
 - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.

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- e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
- f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
- g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.4 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 4. Cover and protect equipment that has not been removed.
 - 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of selective demolition.
- C. Remove temporary barricades and protections where hazards no longer exist.

3.5 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 - 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 - 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 4. Do not use cutting torches.

5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 6. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 7. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 8. Dispose of demolished items and materials promptly. Comply with requirements in Section 017419 "Construction Waste Management and Disposal."
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Work in Historic Areas: Selective demolition may be performed only in areas of Project that are not designated as historic. In historic spaces, areas, and rooms, or on historic surfaces, the terms "demolish" or "remove" shall mean historic "removal" or "dismantling" as specified in Section 024296 "Historic Removal and Dismantling."
- D. Removed and Salvaged Items:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area designated by Owner.
 5. Protect items from damage during transport and storage.
- E. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- F. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their indicated locations after selective demolition operations are complete.
- 3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS
- A. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and recycle or dispose of them according to Section 017419 "Construction Waste Management and Disposal."
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.

3.8 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

SECTION 033000 - CAST-IN-PLACE CONCRETE

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 cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
 - 1. Footings.
 - 2. Slabs-on-grade.
- B. Products installed, but not furnished, under this Section include the following:
 - 1. Anchor rods and embed plates indicated to be cast into cast-in-place concrete, furnished under Division 05 Section "Structural Steel Framing"
- C. Related Sections:
 - 1. Division 01 Section "Quality Requirements" for independent testing agency procedures and administrative requirements.
 - 2. Division 32 Section "Concrete Paving" for concrete pavement and walks.
 - 3. Division 32 Section "Decorative Concrete Paving" for decorative concrete pavement and walks.

1.3 PERFORMANCE REQUIREMENTS

- A. Moisture level in finished concrete shall be within limits acceptable to types of finish flooring indicated. Test methods and acceptable limits shall be as specified in Division 09 finish flooring Sections, or as required by finish flooring manufacturer's written product data or certified written statement. General Contractor is responsible for choosing and implementing methods of limiting excessive moisture during construction and curing, or remedial treatment, process, or other means to bring moisture level within acceptable limits, and for assigning and contracting for these responsibilities to installers

1.4 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground

granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.5 SUBMITTALS

A. Contractor's Statement of Responsibility Per Division 01 Section "Collective Inspections and Structural Testing"

B. Product Data:

1. Bar supports
2. Vapor barriers
3. Epoxy Bonding Adhesive
4. Cartridge Injection Adhesive
5. Form materials
6. Form-release agents
7. Evaporation retarder
8. Curing compound
9. Curing and sealing compound
10. Semirigid joint filler
11. Joint-filler strips
12. Controlled low-strength material, including design mixture.

C. Design Mixtures: For each concrete mixture.

1. Mix design submittals shall include test results and/or trial batch data that meet or exceed the required average compressive strength as required by ACI 301.
2. Trial batches shall consist of identical cementitious materials, fine and course aggregates, and admixtures to be used for mix design.
3. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

D. Steel Reinforcement Shop Drawings:

1. Drawings that detail fabrication, bending, and placement.
2. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and bar supports for concrete reinforcement.
3. Identify all step footing locations and associated reinforcing
4. Identify and dimension all grade beam and tie beam construction joints
5. Include slab on grade construction joint reinforcement
6. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
 - a. Location of construction joints is subject to approval of the Architect.

E. Mill Test Reports (to be provided to the special inspector with each delivery to the site):

1. Submit mill test reports for ASTM A615 reinforcing steel indicating compliance with the ASTM and additional restrictions
2. Submit mill test reports for ASTM A706 reinforcing steel indicating compliance with the ASTM.

- F. Formwork Shop Drawings:
 - 1. Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, and support of formwork.
 - 2. Shoring and Reshoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and reshoring installation and removal.
 - 3. All documentation shall be signed and sealed by a registered professional engineer

- G. Qualification Data:
 - 1. For ready-mix concrete manufacturer.
 - 2. For Cartridge injection adhesive installer. Include manufacturer's training certificates or letter from manufacturer certifying training was complete with a list of individuals that were trained

- H. Material Certificates: For each of the following indicating compliance with the required standards and signed by manufacturers:
 - 1. Vapor barriers

- I. Research/Evaluation Reports:
 - 1. Submit ICC reports for the following:
 - a. Cartridge Injection Adhesive

- J. Hot Weather Program (As required, see below):
 - 1. Describe in detail procedure for working in Hot Weather when concrete temperatures exceed the specified limits. Included detailed description of methods, materials, and equipment to be used to comply with requirements.

- K. Substitutions for Cartridge Injection Adhesive:
 - 1. Substitution requests may only be made using products with ICC-ESR reports for the product in the specific substrate.
 - 2. Substitution request shall include signed and sealed calculations demonstrating that the product is capable of providing equivalent performance of the specified product for each specific location and condition when calculated using the data in the referenced ESR report and in accordance with the appropriate design procedure and standards required by the building code.
 - 3. Substitution request shall specify the diameter and embedment depth of the substituted product
 - 4. Any increase in material cost resulting from the substitution shall be the responsibility of the contractor.

- L. Minutes of preinstallation conference.

1.6 QUALITY ASSURANCE

- A. Engineering Responsibility: Preparation of Shop Drawings, design calculations, and other structural data by a qualified professional engineer.
- B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated.
- C. Installer Qualifications: The installer shall be experienced placing, finishing, curing, treating and protecting concrete equal in material, design and scope to that required for this project
- D. Cartridge Injection Adhesive Installer Training: Conduct a thorough training session with the manufacturer's representative. Each individual responsible for the installation of anchors shall attend the training session. Training shall consist of a review of the complete process for the installation of the anchors and the use of proper equipment for drilling and installing the anchors, to include but not limited to:
 - 1. Hole drilling procedure. Clarify acceptability of rotary hammer drilling and/or core drilling.
 - 2. Hole drilling equipment
 - 3. Type and diameter of drill bits
 - 4. Hole preparation and hole cleaning technique
 - 5. Hole cleaning equipment
 - 6. Adhesive injection technique
 - 7. Adhesive injection equipment
 - 8. Adhesive curing requirements
- E. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- F. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
 - 1. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.
- G. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- H. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

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1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5 and Section 7, "Lightweight Concrete.
 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- I. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- J. Preinstallation Conference: Conduct conference at Project site.
1. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, joint-filler strips, semirigid joint fillers, forms and form removal limitations, shoring and reshoring procedures, , vapor-barrier installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, cartridge injection adhesive installer requirements, floor and slab flatness and levelness measurement, concrete repair procedures, and concrete protection.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement:
1. Deliver, store, and handle steel reinforcement to prevent bending and damage.
 2. Maintain reinforcement free of dirt and other deleterious materials.
 3. Store reinforcing on dunnage or other supports up off of ground.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
1. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
 - a. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.
- D. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

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- E. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- F. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 - 1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
 - 2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.
 - 3. Furnish ties with integral water-barrier plates to walls indicated to receive damp proofing or waterproofing.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars:
 - 1. ASTM A706, Grade 60, deformed
 - 2. ASTM A 615/A 615M, Grade 60, deformed.
 - a. With mill tested yield strength not exceeding specified yield by more than 18,000 psi.
 - b. With mill tested ultimate strength to mill tested yield strength not less than 1.25
- B. Plain-Steel Wire: ASTM A 82/A 82M, as drawn.
- C. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.

2.3 REINFORCEMENT ACCESSORIES

- A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.
- B. Bar Supports: Concrete Brick, Standees, Bolsters, chairs, spacers, supplementary reinforcing steel and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place including measures for supporting and anchoring reinforcing intermediate and top layers of reinforcing. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 - 1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

2. Concrete brick supports are limited to use in supporting the bottom mat of below grade foundation reinforcing steel. Concrete brick supports shall consist of solid units of unit strength equal to or greater than associated foundation concrete. Submit material test reports for approval.
- C. Cartridge Injection Adhesive: A two part adhesive injection system for anchorage of new reinforcing steel to existing concrete construction.
1. Where adhesive manufacturer is not indicated, subject to compliance with requirements and acceptance by the Architect, provide the following or approved equal:
 - a. Hilt HIT RE 500 V3 Adhesive Anchorage System, ICC ESR-3814.
 2. Where specifically indicated in the contract documents provide the following:
 - a. Hilti HIT –HY 200 Adhesive Anchorage System, ICC ESR-3187

2.4 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
1. Portland Cement: ASTM C 150, Type I, Type I/II or Type III unless noted otherwise. Supplement with Fly Ash: ASTM C 618, Class F.
 - a. Do not use Type III Portland Cement for Mass Concrete placement.
- B. Normal-Weight Aggregates: ASTM C 33, Class 3M coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.
1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M and potable.

2.5 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 3. Accelerating Admixture: Non-Chloride, ASTM C494/494M, Type C.

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4. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 5. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 6. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 7. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
- C. Non-Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, non-set-accelerating, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.

2.6 VAPOR BARRIERS

- A. Vapor barrier shall have all of the following qualities:
1. Maintain permeance of less than 0.01 Perms [grains/(ft² · hr. · inHg)] as tested in accordance with mandatory conditioning tests per ASTM E1745 Section 7.1 (7.1.1-7.1.5).
 2. Other performance criteria:
 - a. Strength: ASTM E1745 Class A.
 - b. Thickness: 15 mils minimum
 3. Provide third party documentation that all testing was performed on a single production roll per ASTM E1745 Section 8.1
- B. Vapor barrier products:
1. Basis of Design: Stego Wrap Vapor Barrier (15-mil) by Stego Industries LLC
 2. Approved Alternate: Vaporguard by Reef Industries
 3. Approved Alternate: Miostop Ultra 15 Mil
 4. No substitutions
- C. Seam Tape: Manufacturer's recommended adhesive or pressure-sensitive tape.

2.7 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.
- E. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

2.8 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: Provide one of the following.
1. Flexible lightweight, non-staining, polyethylene, closed cell, non-absorbent, uv stable, compressible foam with a pre-scored removable strip to allow for clean and uniform sealant joint as follows:
 - a. Density: ASTM D1751
 - b. Compression: ASTM D3575
 - 1) 10% Deflection: 10 psi maximum
 - 2) 80% Deflection: 126 psi maximum
 - c. Water absorption: ASTM D3575, 0.5% volume maximum
 2. Resilient, flexible, non-extruding, asphalt-saturated cellulosic fiber with preformed cap to allow for clean and uniform sealant joint
 - a. Density: ASTM D 1751
- B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 per ASTM D 2240.
- C. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
1. Type V, for bonding freshly mixed concrete to hardened concrete.

2.9 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
 - a. Do not use accelerating admixtures for Mass Concrete Placements.
- B. Cementitious Materials:
1. For exterior concrete limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
 - a. Fly Ash: 25 percent.
 - b. Combined Fly Ash and Pozzolan: 25 percent.
- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

- D. Admixtures: Use admixtures as noted in mix design and according to manufacturer's written instructions.
1. Use water-reducing, high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
 4. Use accelerating admixture in concrete as required for cold weather conditions.
 5. Use corrosion-inhibiting admixture in concrete mixtures where indicated.

2.10 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Footings: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 3000 psi at 28 days.
2. Slump Limit: 4 to 6 inches, 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture plus or minus 1 inch.
3. Air Content: 5 percent, plus or minus 1.5 percent at point of delivery.
4. Dry Unit Weight: 145 lb/cu. ft. plus or minus 3 lb/cu. ft.
5. Comply with any additional requirements for Mass Concrete Placements as occur.

- B. Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 3000 psi at 28 days.
2. Slump Limit: 4 to 6 inches, 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture plus or minus 1 inch.
3. Air Content: 3 percent, plus 0 percent or minus 1.5 percent at point of delivery
4. Minimum Cementitious Materials Content: 540 lb/cu. yd.
5. Dry Unit Weight: 145 lb/cu. ft. plus or minus 3 lb/cu. ft.

2.11 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.12 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.
1. Unless a detailed hot weather concrete plan incorporating the recommendations of ACI 305 has been submitted and approved comply with the following:

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- a. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes.
- b. When air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
 1. Smooth-formed finished surfaces: Class A, 1/8 inch
 2. Rough-formed finished surfaces: Class D, 1 inch
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 1. Install keyways, reglets, recesses, and the like, for easy removal.
 2. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of permanently exposed concrete.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

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- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."
 - 2. Anchor rods and embeds shall be securely fastened in formwork prior to placing concrete, and concrete vibrated around the anchor or embed to ensure proper flow of concrete around anchors and embeds.
 - 3. Anchor rod sleeves (where required) shall be accurately located and fastened in formwork prior to placing concrete.
 - 4. Wet setting of anchor rods and embeds is not permitted.
 - 5. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3.3 REMOVING AND REUSING FORMS

- A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.
 - 1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved its 28-day design compressive strength.
 - 2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 SHORES AND RESHORES

- A. Comply with ACI 318 and ACI 301 for design, installation, and removal of shoring and reshoring.
- B. In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.
- C. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.5 VAPOR BARRIERS

- A. Install vapor barriers in accordance ASTM E1643 and manufacturer's written instructions.
 - 1. Unroll vapor barrier with the longest dimension parallel with the direction of the concrete placement and face laps away from the expected direction of the placement whenever possible.
 - 2. At conditions terminating into a wall, it is important that continuity of the vapor barrier is maintained and sealed to the exterior stem wall or slab turn-down.
 - a. Complete termination to exterior conditions as indicated on drawings for typical conditions, i.e following specific procedure for turning a strip of vapor barrier down and sealing to wall or footing, compacting the earth at the perimeter, and lapping back onto field vapor barrier and sealing all joints.
 - b. Alternatively, contractor may turn vapor barrier up wall, extend to top of slab and seal to wall with manufacturer's tape in strict accordance with manufacturer's recommendations.
 - c. Specific conditions that compromise continuity of the vapor barrier seal to the exterior wall should be brought to the attention of the architect, and an alternative solution devised that fulfills the intent of the vapor barrier.
 - 3. Overlap joints per manufacturer, but not less than 6 inches and seal with manufacturer's seam tape.
 - 4. Manufacturer's seam tape shall be applied to a clean and dry vapor barrier in strict accordance with the manufacturer's recommendations.
 - 5. Extend vapor barrier to edge of slab in all cases.
 - 6. Seal all penetrations (including pipes and permanent stakes) per manufacturer's instructions.
 - 7. Do not use non-permanent stakes driven through the vapor barrier.
 - 8. Use reinforcing bar supports with base sections that eliminate or minimize the potential for puncture of the vapor barrier.
 - 9. Repair damaged areas with vapor barrier material of similar (or better) permeance, puncture and tensile strength. Seal with manufacturer's tape or mastic in strict accordance with manufacturer's recommendations for repair.

3.6 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 - 1. Do not cut or puncture vapor barrier. Repair damage and reseal vapor barrier before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- C. Anchorage of reinforcement into hardened concrete using cartridge injection adhesive anchors shall only be used where specifically indicated on plans or with written direction from the Engineer of Record for a specific location.
- D. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
 - 1. Foundation reinforcing steel may be supported on solid concrete brick units of strength equal to or greater than foundation concrete.
- E. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- F. Welded Wire Reinforcement:
 - 1. Install welded wire reinforcement in longest practicable lengths
 - 2. Locate welded wire reinforcement in top 1/3 of slab on grades unless noted otherwise
 - 3. Locate welded wire reinforcement at mid-depth of concrete slab thickness over deck flutes unless noted otherwise.
 - 4. Lap edges and ends of adjoining sheets at least one mesh spacing plus 2", but not less than 6". Lace overlaps with wire.
 - 5. Slabs on Grade 4" or less in thickness: Support welded wire reinforcement on chairs, bolsters or bar supports spaced to minimize sagging, and as required to support construction traffic
 - a. Alternately, welded wire reinforcement may be placed on grade and "hooked"/pulled to the proper location
 - b. Placement of welded wire reinforcement after placement of concrete and "walking in" is not permitted.
 - 6. Slabs on Grade greater than 4" in thickness: Support welded wire reinforcement on chairs, bolsters or bar supports spaced to minimize sagging, and as required to support construction traffic
 - a. Placement of welded wire reinforcement on grade or deck and "hooked"/pulled up into slab as concrete is placed is not permitted.
 - b. Placement of welded wire reinforcement after placement of concrete and "walking in" is not permitted.

7. Elevated slabs: Support welded wire reinforcement on chairs, bolsters or bar supports spaced to minimize sagging, and as required to support construction traffic
 - a. Alternately, welded wire reinforcement may be placed on grade and “hooked”/pulled to the proper location
 - b. Placement of welded wire reinforcement after placement of concrete and “walking in” is not permitted.

3.7 CARTRIDGE INJECTION ADHESIVE

- A. Where manufacturer recommends the use of special tools for installation of anchors, such tools shall be used.
- B. All facets of hole drilling, hole cleaning, anchor installation, anchor torqueing shall be in strict accordance with the ICC-ESR report and manufacturer’s data.
- C. Drill holes perpendicular to substrate surface.
- D. Drill holes with rotary impact hammer drills using carbide-tipped bits or core drills using diamond core bits as indicated in the ICC-ESR report.
- E. Drill bits and core bits shall be of diameters indicated in the ICC-ESR report.
- F. All holes shall be cleaned with compressed air to remove all drilling dust and other deleterious substances.
- G. Remove water from holes to attain a surface dry condition unless specifically permitted otherwise by ICC-ESR report.
- H. Base Material Strength: Unless otherwise specified, do not drill holes in concrete or masonry until concrete has achieved full design strength.
- I. Hilti HIT-HY200 system adhesive shall be installed using the Hilti Safe Set Technology.
 1. The Hilti hollow drill bit and Hilt vacuum system shall be employed.
- J. Embedded Items: Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Exercise care in coring or drilling to avoid damaging existing reinforcing or embedded items. Notify the Engineer if reinforcing steel or other embedded items are encountered during drilling. Take precautions as necessary to avoid damaging prestressing tendons, electrical and telecommunications conduit, and gas lines.
- K. Inject adhesive into holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive.
- L. Follow manufacturer recommendations to ensure proper mixing of adhesive components.

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- M. Sufficient adhesive shall be injected in the hole to ensure that the annular gap is filled to the surface.
- N. Remove excess adhesive from the surface.
- O. Shim reinforcement with suitable device to center the reinforcement in the hole.
- P. Do not disturb or load reinforcement before manufacturer specified cure time has elapsed.
- Q. Observe manufacturer recommendations with respect to installation temperatures.

3.8 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 - 1. Place joints perpendicular to main reinforcement.
 - 2. Continue reinforcement across construction joints unless otherwise indicated.
 - 3. Provide supplemental reinforcing and/or smooth dowels where indicated at joints.
 - 4. Strip bulkheads from footings, beams, grade beams, tie beams, and slabs and roughen surface of concrete to a minimum 1/4" amplitude while concrete is still plastic.
 - 5. Form keyed joints unless indicated otherwise. Embed keys at least 1-1/2 inches into concrete unless noted otherwise.
 - 6. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
 - 7. Locate joints in slabs on steel deck as follows:
 - a. Joints parallel to joists (perpendicular to girders) shall be located at the midpoint between two adjacent joists.
 - b. Joints parallel to girders (perpendicular to joists) shall be located at the midpoint of two adjacent girders.
 - c. Stagger and offset joints as required to meet the requirements.
 - 8. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
 - 9. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
 - 10. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least [one-fourth of concrete thickness as follows:

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1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete.
 - a. Cut joints as soon as cutting action will not tear, abrade, or otherwise damage surface, but not more than 12 hours after finished, and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
 2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Division 07 Section "Joint Sealants," are indicated.
 3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

3.9 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301 and as follows.
1. Do not add water to concrete unless the batched water is specifically noted as less than the mix design and is indicated as such on the batch ticket.
 2. Do not add more water than the amount of withheld water which is specifically identified on the batch ticket.
 3. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- C. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer

and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

- D. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
 - 1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 - 2. Maintain reinforcement in position on chairs during concrete placement.
 - 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
 - 4. Slope surfaces uniformly to drains where required.
 - 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

- E. Concrete placed over metal deck shall be placed and screeded level and flat to the specified tolerances, maintaining at least the minimum specified slab thickness as shown on drawings. The contractor shall increase slab thickness as required to compensate for metal deck deflection, residual beam camber and beam deflection in order to achieve a level and flat floor within the specified tolerance.

- F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

- G. Hot-Weather Placement: Comply with ACI 305.1 and as follows:
 - 1. Maintain concrete temperature below 90 deg F at time of placement unless a detailed hot weather concrete plan incorporating the recommendations of ACI 305.1 has been submitted and approved. At no time shall concrete temperature exceed 95 deg F at time of placement.
 - 2. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.10 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces not exposed to public view
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces exposed to public view, to be covered with a coating or covering material applied directly to concrete coordinate with Architectural drawings and specifications.
- C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:
 - 1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.11 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in one direction.
 - 1. Apply scratch finish to surfaces to receive concrete floor toppings or to receive mortar setting beds for bonded cementitious floor finishes.
- C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraighening until surface is left with a uniform, smooth, granular texture.
 - 1. Apply float finish to surfaces to receive trowel finish, trowel and fine broom finish, or to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.

2. Apply to mud slabs.
- D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
1. Apply a trowel finish to surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, epoxy terrazo or another thin-film-finish coating system.
 2. FF = 35FL = 25
- E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set method without cleavage membrane. While concrete is still plastic, slightly scarify surface with a fine broom.
1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.
- F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.
1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.
- G. Slip-Resistive Finish:
- H. Dry-Shake Floor Hardener Finish:

3.12 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.
- D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel finish concrete surfaces.

3.13 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- E. Foundations:
 - 1. Protect top sides of footings to receive masonry or concrete construction from dirt and debris.
 - 2. Excavations:
 - a. Do not allow excavations directly adjacent to or beneath footings to the absolute greatest extent possible.
 - b. Where excavations must occur beneath in place footings or slabs the area shall be careful excavated as to not damage structural elements. The area shall be backfilled and compacted at the end of the work day.
 - c. Areas excavated below footings shall be backfilled with Controlled Low-Strength Material.
 - d. Areas excavated adjacent to and at or below footing elevation shall be backfilled with Controlled Low-Strength Material unless the area is large enough to be backfilled with control fill in lifts attaining proper compaction between lifts.
- F. Slabs:
 - 1. Protect slabs to remain expose, stained or receive other non-opaque floor coverings or treatments with impervious covers to prevent staining of the slab
 - 2. Do not allow construction equipment or vehicles to drive on slabs.
 - 3. Excavations:
 - a. Do not allow excavations directly adjacent to or beneath slabs on grade to the absolute greatest extent possible.
 - b. Where excavations must occur beneath in place footings or slabs the area shall be careful excavated as to not damage structural elements. The area shall be backfilled and compacted at the end of the work day.

- c. Areas excavated below slabs shall be backfilled with Controlled Low-Strength Material. Areas excavated adjacent to and at or below slab elevation shall be backfilled with Controlled Low-Strength Material unless the area is large enough to be backfilled with control fill in lifts attaining proper compaction between lifts.
 - d. Repair vapor barriers per manufacturer's requirements
- G. Cure concrete according to ACI 308.1, as follows:
- 1. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
 - b. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.
 - 2. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.
 - 3. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.
 - a. Apply curing and sealing compound to areas of exposed concrete not to receive any floor treatment, staining, painting or floor covering. Coordinate with finish schedule.

3.14 CONCRETE REPAIRS

- A. Where deficient concrete is identified on the job all repairs shall be subject to the EOR and AOR approval.
- B. The contractor shall be responsible for enlisting a concrete repair specialists with no less than 5 years of documented concrete repair service and having repaired deficient conditions similar to those identified on no less than 5 projects in the previous five years.

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- C. The contractor and repair specialists shall prepare a narrative of the proposed repair including detailed methods and material, and submit for EOR approval prior to commencing with repairs.
- D. Where repair of deficient work is to remain exposed, the deficient work shall be removed and replaced as directed by the EOR.

3.15 JOINT FILLING

- A. Fill all joints in exposed concrete slabs
- B. Prepare, clean, and install joint filler according to manufacturer's written instructions.
 - 1. Defer joint filling until concrete has aged at least one month(s). Do not fill joints until construction traffic has permanently ceased.
- C. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.
- D. Install semirigid joint filler full depth in saw-cut joints and at least 1 deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.16 FIELD QUALITY CONTROL

- A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports in accordance with the schedule of special inspections.
- B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

END OF SECTION 033000

SECTION 042000 - UNIT 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. Concrete masonry units.
2. Clay face brick.
3. Mortar and grout.
4. Steel reinforcing bars.
5. Masonry-joint reinforcement.
6. Ties and anchors.
7. Embedded flashing.
8. Miscellaneous masonry accessories.
9. Masonry-cell fill.

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.

C. Related Requirements:

1. Section 076200 "Sheet Metal Flashing and Trim" for sheet metal flashing and for furnishing integrated flashing installed in masonry joints.
2. Division 01 Section "Quality Requirements" for independent testing agency procedures and administrative requirements.
3. Division 03 Section "Cast-in-Place Concrete" for reinforcing steel dowels for anchoring concrete unit masonry to cast-in-place concrete.
4. Division 05 Section "Structural Steel" for furnishing loose lintels.

1.3 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.
- C. Lintel: A steel, masonry, or precast beam type structure used to support masonry and other framing.

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1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."
 - 1. Review construction sequencing and required time allotted for inspections prior to grouting.
 - 2. Review ACI 530 tolerance for placement of reinforcing steel.
 - 3. Review hot and cold weather procedures.
 - 4. Review typical details for reinforcement requirements
 - 5. Review requirements for horizontal joint reinforcement
 - 6. Review reinforcement placement tolerance
 - 7. Review reinforcement anchorage requirements
 - 8. Review reinforcement lap requirements
 - 9. Review reinforced masonry construction sequence
 - 10. Review limits on embedded items in grouted masonry
 - 11. Review grouting procedures and requirement for mechanical vibration.
 - 12. Review requirements for masonry protection

- B. Preinstallation Conference: Conduct conference at Project site.

1.5 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 and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement."
 - a. Show elevations of all reinforced walls including reinforcing per typical details for all openings including but not limited to openings for steel bearing, joist pockets, ductwork and piping. Show masonry control joints.
 - b. Dowels shall match typical wall reinforcing unless noted otherwise.
 - c. Dowels shall extend a lap distance above finished floor, unless top of footing is more than typical bar lift below finished floor. In such an instance dowel shall extend a lap distance out of footing.
 - d. Coordinate bar lift detailing with sequencing requirements of part 3 of this specification section.
 - e. Layout cmu masonry control joints per contract documents and show associated typical reinforcing. If control joints are not indicated, provide a maximum spacing of 3xheight (floor to floor).
 - f. General Contractor shall coordinate all necessary openings in masonry walls with all subcontractors and shall provide information to reinforcing steel detailer for preparation of shop drawings.
 - g. Where above the ceiling coordination drawings are a project requirement the coordination drawings shall be provided to the reinforcing steel detailer to aid in developing elevation of reinforced walls.
 - h. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevations of reinforced walls.

- i. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.
 - C. Samples for Initial Selection:
 - 1. Clay face brick.
 - 2. Colored mortar.
 - 3. Weep holes/cavity vents.
 - D. 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. Pigmented and colored-aggregate mortar. Make Samples using same sand and mortar ingredients to be used on Project.
 - 4. Cavity vents.
 - 5. Accessories embedded in masonry.
 - E. Contractor's Statement of Responsibility Per Division 01 Section "Collective Inspections and Structural Testing"
 - F. Product Data:
 - 1. Single Wythe Masonry Joint reinforcement
 - 2. Multiwythe Cavity Wall Joint Reinforcement
 - 3. Veneer Joint Reinforcement
 - 4. Adjustable Anchors for Connecting to Structural Steel Framing
 - 5. Partition Top Anchors
 - 6. Rigid Anchors
 - G. Qualification Data:
 - 1. Masonry Installer.
 - 2. Post Installed Structural Anchor Installer
- 1.6 INFORMATIONAL SUBMITTALS
- A. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.
 - 1. Submittal is for information only. Receipt of list does not constitute approval of deviations from the Contract Documents unless such deviations are specifically brought to the attention of Architect and approved in writing.
 - B. 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 C67.
 - d. For surface-coated brick, include test report for durability of surface appearance after 50 cycles of freezing and thawing according to ASTM C67.
 - e. For masonry units used in structural masonry, 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.
 - C. 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 C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
 2. Include test reports, according to ASTM C1019, for grout mixes required to comply with compressive strength requirement.
 - D. 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.
 - E. 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 C1093 for testing indicated.
 - B. Sample Panels: Build sample panels to verify selections made under Sample submittals and to demonstrate aesthetic effects. Comply with requirements in Section 014000 "Quality Requirements" for mockups.
 - C. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 1. Contractor shall erect 1 masonry pier around existing steel as a "mockup" prior to erecting any other brick/cmu. Upon acceptance by the Architect and Owner, the mockup may be incorporated into the work. Contractor shall not proceed with any other masonry until the mockup is approved.

2. Build mockup as shown on Drawings.
 3. Build mockups for typical exterior wall as shown on drawings, including face and backup wythes and accessories.
 - a. Include a sealant-filled joint at least 24 inches long in mockup.
 - b. Include window opening. Make opening approximately 16 inches (400 mm) wide by 16 inches (400 mm) high.
 - c. Include through-wall flashing.
 - d. Include studs, sheathing, air barrier, veneer anchors, flashing, cavity drainage material, and weep holes in exterior masonry-veneer wall mockup.
 4. Clean exposed faces of mockups with masonry cleaner as indicated.
 5. Protect accepted mockups from the elements with weather-resistant membrane.
 6. 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.
 - a. Approval of mockups is also for other material and construction qualities specifically approved by Architect in writing.
 - b. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
- D. Masonry Installer: A single, experienced firm, or an approved joint venture, specializing in masonry construction with a minimum five- year record of successful completion of projects of similar scope, capable of providing labor and material and performance bonds for its portion of the Work that are acceptable to the Owner. Installer shall furnish all required materials and equipment and perform the work of this Section with its own regular employees.
1. The masonry supervisor/foreman shall have had at least 5 years of experience with at least 5 projects of similar size and nature; he shall not act as or become a production worker.
 2. The lead/crew chief masons shall have had at least 3 years of experience with at least 5 projects of similar size and nature;
 3. Installer shall have experienced masonry superintendent and crew chiefs on site supervising the work whenever work is in progress.
 4. Contractor's Own Forces: Contractor may utilize own forces for work of this Section when Contractor and Contractor's masonry superintendent and crew chiefs meet the above qualifications.
- E. Post Installed Structural Anchor Installer: See specification section 050520 for requirements
- F. 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.
- G. 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.

- H. Limitations on Aggregates: For concrete masonry units containing recycled material or post-industrial waste, provide units free of impurities that will cause rusting, staining or popouts and with a record of successful in-service performance in conditions similar to those expected at Project site.
 - 1. Ferrous material shall be removed by magnetic separation.
 - 2. Aggregates shall contain no combustible materials.
 - 3. Aggregates shall be graded and supplied in consist graduations from batch to batch.
 - 4. Material shall be tested according to the following:
 - a. ASTM C40: Organic Impurities in Fine Aggregates for Concrete.
 - b. ASTM C 136: Sieve Analysis of Fine and Coarse Aggregate.
 - c. ASTM C 641: Staining Materials in Lightweight Concrete Aggregates.
 - d. ASTM C 151: Autoclave Expansion of Hydraulic Cement (for popouts.)
- I. Masonry Standard: Comply with ACI 530.1/ASCE 6/TMS 602 unless modified by requirements in the Contract Documents.
- J. Grout Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design grout mixtures.
- K. Daily Log: Maintain a daily log of masonry work in progress for inspection by Owner, Architect, Special Inspector or Authority Having Jurisdiction.
 - 1. Indicate on small scale plans where masonry was erected.
 - 2. Indicate on small scale plans where masonry was grouted.
 - 3. Identify crew and assigned work area.
 - 4. Certify that the following tasks have been performed.
 - a. Inspection of construction and verification of compliance with requirements as indicated in schedule of special inspections.
 - b. Daily Cleaning.
- L. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

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 (600 mm) down both sides of walls, and hold cover securely in place.
 - 2. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches (600 mm) 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 (4 deg C) 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.

PART 2 - PRODUCTS

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 PERFORMANCE REQUIREMENTS

- A. Provide structural unit masonry that develops indicated net-area compressive strengths at 28 days.
 - 1. Determine net-area compressive strength of masonry by testing masonry prisms according to ASTM C1314.

2.3 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.

2.4 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
 - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
 - 2. Provide square-edged units for outside corners unless otherwise indicated.
- B. CMUs: ASTM C90, 1900 PSI or greater.
 - 1. Density Classification: Lightweight.
 - 2. Size (Width): Manufactured to dimensions 3/8 inch (10 mm) less than nominal dimensions.

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3. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.
 4. Faces to Receive Plaster: Where units are indicated to receive a direct application of plaster, provide textured-face units made with gap-graded aggregates.
- C. Integral Water Repellent: Provide units made with integral water repellent for exterior wall units.
1. Integral Water Repellent: Liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested according to ASTM E 514 as a wall assembly made with mortar containing integral water-repellent manufacturer's mortar additive, with test period extended to 24 hours, shall show no visible water or leaks on the back of test specimen.

2.5 MASONRY LINTELS

- A. General: Provide one of the following:
- B. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from true lintel block for single course lintels and lintel block and open bottom bond beams for multiple course lintels 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.

2.6 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 C216.
1. Basis of Design (for bidding purposes): Meridian Brick, contact Phil Hartig at (843) 647-9476.
 - a. Colors: Provide job site mix "Chesapeake Modular", pulled from 3 different cubes for same area of work. As general rule every 9 to 12 horizontal should be dark.
 2. Grade: SW, 3,000 PSI compressive strength minimum.
 3. Type: FBX.
 4. Initial Rate of Absorption: Less than 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested according to ASTM C67.

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5. Efflorescence: Provide brick that has been tested according to ASTM C67 and is rated "not effloresced."
6. Size (Actual Dimensions): 3-5/8 inches (92 mm) wide by 2-1/4 inches (57 mm) high by 7-5/8 inches (194 mm) long.

2.7 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C150/C150M, 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 C114.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Masonry Cement: ASTM C91/C91M. (Brick masonry only)
- E. Mortar Cement: ASTM C1329/C1329M.
- F. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C979/C979M. Use only pigments with a record of satisfactory performance in masonry mortar.
- G. Colored Cement Products: Packaged blend made from portland cement and hydrated lime or masonry cement and mortar pigments, all complying with specified requirements, and containing no other ingredients.
 1. Colored Portland Cement-Lime Mix:
 - 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) Holcim (US) Inc.
 - 2) Lafarge North America Inc.
 - 3) Lehigh Hanson; HeidelbergCement Group.
 2. Colored Masonry Cement:
 - 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) Holcim (US) Inc.
 - 2) Lafarge North America Inc.
 - 3) Lehigh Hanson; HeidelbergCement Group.
 - b. Color: To be selected from manufacturer's full color range.
 3. Formulate blend as required to produce color indicated or, if not indicated, as

- selected from manufacturer's standard colors.
- 4. Pigments shall not exceed 10 percent of portland cement by weight.
- 5. Pigments shall not exceed 5 percent of masonry cement or mortar cement by weight.
- H. Aggregate for Mortar: ASTM C144.
 - 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
 - 2. White-Mortar Aggregates: Natural white sand or crushed white stone.
 - 3. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
- I. Aggregate for Grout: ASTM C404.
- J. Water: Potable.

2.8 REINFORCEMENT

- A. Uncoated-Steel Reinforcing Bars: ASTM A615/A615M or ASTM A996/A996M, Grade 60 (Grade 420).
- 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 (3.77-mm) steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.
- C. Masonry-Joint Reinforcement, General: ASTM A951/A951M.
 - 1. Interior Walls: Hot-dip galvanized carbon steel.
 - 2. Exterior Walls: Hot-dip galvanized carbon steel.
 - 3. Wire Size for Side Rods: 0.187-inch (4.76-mm) diameter, minimum.
 - 4. Wire Size for Cross Rods: 0.187-inch (4.76-mm) diameter, minimum.
 - 5. Wire Size for Veneer Ties: 0.187-inch (4.76-mm) diameter, minimum.
 - 6. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches (407 mm) o.c.
 - 7. Provide in lengths of not less than 10 feet (3 m), with prefabricated corner and tee units.
- D. Masonry-Joint Reinforcement for Single-Wythe Masonry: Ladder type with single pair of side rods.
- E. Masonry-Joint Reinforcement for Multiwythe Masonry:
 - 1. Adjustable (two-piece) type, 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.

- F. Masonry-Joint Reinforcement for Veneers Anchored with Seismic Masonry-Veneer Anchors: Single 0.187-inch- (4.76-mm-) diameter, hot-dip galvanized carbon steel continuous wire.
 - 1. General: Provide anchors that allow vertical adjustment but resist a 135-lb 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).

2.9 TIES AND ANCHORS

- A. General: Ties and anchors shall extend at least 1-1/2 inches (38 mm) into veneer but with at least a 5/8-inch (16-mm) 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 A82/A82M, with ASTM A153/A153M, Class B-2 coating.
 - 2. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- C. Individual Wire Ties: Rectangular units with closed ends and not less than 4 inches (100 mm) wide.
 - 1. Where wythes do not align or are of different materials, use adjustable ties with pintle-and-eye connections having a maximum adjustment of 1-1/4 inches (32 mm).
 - 2. Wire: Fabricate from 3/16-inch- (4.76-mm-) diameter, hot-dip galvanized steel wire.
- D. 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- (6.35-mm-) diameter, hot-dip galvanized steel wire.
 - 2. Tie Section: Triangular-shaped wire tie made from 0.187-inch- (4.76-mm-) diameter, hot-dip galvanized steel wire.
- E. 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 0.105-inch- (2.66-mm-) thick steel sheet, galvanized after fabrication.
 - a. 0.108-inch- (2.74-mm-) thick, galvanized-steel sheet may be used at interior walls unless otherwise indicated.
 - 2. Tie Section: Triangular-shaped wire tie made from 0.187-inch- (4.76-mm-) diameter, hot-dip galvanized steel wire.
- F. Partition Top Anchors: 0.105-inch- (2.66-mm-) thick metal plate with a 3/8-inch- (9.5-mm-) diameter metal rod 6 inches (152 mm) long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from

steel, hot-dip galvanized after fabrication.

- G. Rigid Anchors: Fabricate from steel bars 1-1/2 inches (38 mm) wide by 1/4 inch (6.35 mm) thick by 24 inches (610 mm) long, with ends turned up 2 inches (51 mm) or with cross pins unless otherwise indicated.
 - 1. Corrosion Protection: Hot-dip galvanized to comply with ASTM A153/A153M.
- H. Adjustable Masonry-Veneer Anchors:
 - 1. General: Provide anchors that allow vertical adjustment but resist a 135-lb 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 wire ties from 0.187-inch- (4.76-mm-) diameter, hot-dip galvanized- steel stainless steel wire unless otherwise indicated.
 - 3. Seismic Masonry-Veneer Anchors: Connector section and a gasketed sheet metal anchor section, 1-1/4 inches (32 mm) wide by 6 inches (152 mm) long, with screw holes top and bottom; top and bottom ends bent to form pronged legs of length to match thickness of insulation or sheathing; and raised rib-stiffened strap, 5/8 inch (16 mm) wide by 6 inches (152 mm) 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- (4.76-mm-) diameter, hot-dip galvanized, carbon steel wire.

2.10 EMBEDDED FLASHING MATERIALS

- A. Metal Flashing: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:
 - 1. Copper: ASTM B370, Temper H00, cold-rolled copper sheet, 16-oz./sq. ft. (4.9-kg/sq. m) weight or 0.0216 inch (0.55 mm) thick or ASTM B370, Temper H01, high-yield copper sheet, 12-oz./sq. ft. (3.7-kg/sq. m) weight or 0.0162 inch (0.41 mm) thick.
 - 2. Fabricate continuous flashings in sections 96 inches (2400 mm) long minimum, but not exceeding 12 feet (3.7 m). 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 (76-mm) intervals along length of flashing to provide an integral mortar bond.
 - 4. Fabricate through-wall flashing with drip edge unless otherwise indicated. Fabricate by extending flashing 1/2 inch (13 mm) out from wall, with outer edge bent down 30 degrees and hemmed.
 - 5. Fabricate metal drip edges for ribbed metal flashing from plain metal flashing of same metal as ribbed flashing and extending at least 3 inches (76 mm) into wall with hemmed inner edge to receive ribbed flashing and form a hooked seam. Form hem on upper surface of metal so that completed seam sheds water.
 - 6. Fabricate metal drip edges from stainless steel. Extend at least 3 inches (76 mm) into wall and 1/2 inch (13 mm) out from wall, with outer edge bent down 30 degrees and hemmed.

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 Laminated Flashing: 0.030 Type 316 stainless steel bonded to a layer of polymeric fabric. Use only where flashing is fully concealed in masonry.
- 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 flexible flashing with a metal drip edge.
 4. Where flashing is fully concealed, use flexible flashing.
- D. Solder and Sealants for Sheet Metal Flashings: As specified in Section 076200 "Sheet Metal Flashing and Trim."
1. Solder for Stainless Steel: ASTM B32, Grade Sn96, with acid flux of type recommended by stainless steel sheet manufacturer.
 2. Elastomeric Sealant: ASTM C920, chemically curing silicone sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and remain watertight.
- E. 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.
- F. Termination Bars for Flexible Flashing: Stainless steel bars 0.075 inch by 1 inch (1.90 mm by 25 mm).

2.11 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D1056, 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 D2000, 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 D226/D226M, Type I (No. 15 asphalt felt).
- D. Weep/Cavity Vent Products: Use the following unless otherwise indicated:
1. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch (3

mm) less than depth of outer wythe, in color selected from manufacturer's standard.

- E. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
 - 1. Configuration: Provide one of the following:
 - a. Strips, full depth of cavity and 10 inches (250 mm) high, with dovetail-shaped notches 7 inches (175 mm) deep that prevent clogging with mortar droppings.

2.12 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.

2.13 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.
 - 2. For exterior masonry veneer, use portland cement-lime masonry cement or mortar cement mortar.
 - 3. For reinforced masonry, use portland cement-lime or mortar cement mortar.
 - 4. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended 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 C270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
 - 1. For masonry below grade or in contact with earth, use Type M.
 - 2. For reinforced masonry, use Type M.
 - 3. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type N.
 - 4. For interior nonload-bearing partitions, Type N.

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- D. Pigmented Mortar: For masonry veneer use colored cement product or select 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. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color. (option)
 - 1. Application: Use colored-aggregate mortar for exposed mortar joints with the following units:
 - a. Clay face brick.
- F. Grout for Unit Masonry: Comply with ASTM C476.
 - 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 C476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 3000 psi.
 - 3. Provide grout with a slump of 8 to 11 inches (200 to 280 mm) as measured according to ASTM C143/C143M.

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.

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 (12 mm) or minus 1/4 inch (6 mm).
- 2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch (12 mm).
- 3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch (6 mm) in a story height or 1/2 inch (12 mm) 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 (6 mm in 3 m), or 1/2-inch (12-mm) 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 (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2-inch (12-mm) maximum.
- 3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2-inch (12-mm) 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 (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2-inch (12-mm) maximum.
- 5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2-inch (12-mm) maximum.
- 6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), or 1/2-inch (12-mm) maximum.

7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch (1.5 mm) 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 (3 mm), with a maximum thickness limited to 1/2 inch (12 mm).
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch (3 mm).
3. For head and collar joints, do not vary from thickness indicated by more than plus 1/4 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 (3 mm). Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch (3 mm).
5. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch (1.5 mm) 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 (100-mm) 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 (100 mm). Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch (100-mm) 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. This includes, but not limited to penetrations for MEP work. Fill in solidly with masonry around built-in items.
- F. 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.
- G. Fill cores in hollow CMUs with grout 24 inches (600 mm) under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated on the structural drawings.

- H. Build nonload-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
 - 1. Install compressible filler in joint between top of partition and underside of structure above.
 - 2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch (13-mm) clearance between end of anchor rod and end of tube. Space anchors 48 inches (1200 mm) o.c. unless otherwise indicated.
 - 3. Wedge nonload-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
 - 4. 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.
- D. Cut joints flush for masonry walls to receive adhered GWB or other direct-applied finishes (other than paint) unless otherwise indicated.
- E. Cut joints flush where indicated to receive cavity wall insulation or air barriers unless otherwise indicated.

3.6 CAVITY WALLS

- A. Bond wythes of cavity walls together as follows:
 - 1. Masonry-Joint Reinforcement: Installed in horizontal mortar joints.
 - a. 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.

- b. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable-type (two-piece-type) reinforcement with continuous horizontal wire in facing wythe attached to ties to allow for differential movement regardless of whether bed joints align.
- 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. Installing Cavity Wall Insulation: Place small dabs of adhesive, spaced approximately 12 inches (300 mm) 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.

3.7 ANCHORED MASONRY VENEERS

- A. Anchor masonry veneers to wall framing and concrete and masonry backup with seismic masonry-veneer anchors to comply with the following requirements:
 1. Fasten screw-attached and seismic anchors through sheathing to wall framing and to concrete and masonry backup with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
 2. Embed tie sections connector sections and continuous wire] in masonry joints.
 3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
 4. Space anchors as indicated, but not more than 16 inches o.c. vertically and horizontally. Install additional anchors within 12 inches of openings and at intervals, not exceeding 12 inches, around perimeter.
- B. Provide not less than 2 inches (50 mm) 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.

3.8 MASONRY-JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch (16 mm) on exterior side of walls, 1/2 inch (13 mm) elsewhere. Lap reinforcement a minimum of 6 inches (150 mm).
 1. Space reinforcement not more than 16 inches (406 mm) o.c.
 2. Space reinforcement not more than 8 inches (203 mm) o.c. in foundation walls and parapet walls.

3. Provide reinforcement not more than 8 inches (203 mm) above and below wall openings and extending 12 inches (305 mm) 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.

3.9 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 1/2 inch (13 mm) 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 (610 mm) o.c. vertically and 36 inches (915 mm) o.c. horizontally.

3.10 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 as follows:
 1. Install preformed control-joint gaskets designed to fit standard sash block.
- C. 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 (10 mm).
 1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry.

3.11 LINTELS

- A. Install steel lintels where indicated.
 1. Provide a 3/8" bent plate loose lintel at all brick veneer penetrations, including MEP penetrations.
- B. Provide lintels where shown and where openings of more than 12 inches (305 mm) for brick-size units and 24 inches (610 mm) for block-size units are shown without structural steel or other supporting lintels.

- C. Provide minimum bearing of 8 inches (200 mm) at each jamb unless otherwise indicated.

3.12 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 multiwythe masonry walls, including cavity walls, extend flashing through outer wythe, turned up a minimum of 8 inches (200 mm), and 1-1/2 inches (38 mm) into the inner wythe.
 - 3. At masonry-veneer walls, extend flashing through veneer, across airspace behind veneer, and up face of sheathing at least 8 inches (200 mm); with upper edge tucked under air barrier, lapping at least 4 inches (100 mm). Fasten upper edge of flexible flashing to sheathing through termination bar.
 - 4. At lintels and shelf angles, extend flashing a minimum of 6 inches (150 mm) into masonry at each end. At heads and sills, extend flashing 6 inches (150 mm) at ends and turn up not less than 2 inches (50 mm) to form end dams.
 - 5. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch (13 mm) back from outside face of wall, and adhere flexible flashing to top of metal drip edge.
- 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. Space weep holes 24 inches (600 mm) o.c. unless otherwise indicated.
- E. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.

3.13 REINFORCED UNIT MASONRY

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
 - 1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar

and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.

2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and that of other loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.

C. 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.
2. Limit height of vertical grout pours to not more than 60 inches (1520 mm).

3.14 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.

B. Inspections: Special inspections according to Level C in TMS 402/ACI 530/ASCE 5.

1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
3. Place grout only after inspectors have verified proportions of site-prepared grout.

C. Testing Prior to Construction: One set of tests.

D. Testing Frequency: One set of tests for each 5000 sq. ft. (464 sq. m) of wall area or portion thereof.

E. Prism Test: For each type of construction provided, according to ASTM C1314 at 7 days and at 28 days.

3.15 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.

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- 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 nonmasonry 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 and in accordance with cleaning solution manufacturer's instructions.
 - 6. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.

3.16 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. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
 - 1. Crush masonry waste to less than 4 inches (100 mm) in each dimension.
 - 2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Section 312000 "Earth Moving."
 - 3. Do not dispose of masonry waste as fill within 18 inches (450 mm) of finished grade.
- C. Masonry Waste Recycling: Return broken CMUs not used as fill to manufacturer for recycling.
- D. 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 050505 - GALVANIC CORROSION PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish all labor, materials, tools, equipment, and services for Galvanic Corrosion Protection, as indicated, in accordance with provisions of Contract Documents.
- B. Use information in this Section to coordinate, select and apply products listed in other Sections for purposes of Galvanic Corrosion Protection.
- C. Completely coordinate with work of other trades.

1.2 QUALITY ASSURANCE

- A. Provide galvanic corrosion protection:
 1. Appendix C, SMACNA Sheet Metal Manual –6th. Edition.
 2. ASTM G82 and ASTM STP576.

1.3 GALVANIC CORROSION POTENTIAL

- A. Galvanic Scale: Less Noble, electropositive or anodic metals which corrode more readily are at top of scale. Those that are more electronegative or cathodic, Noble, are at bottom of scale.

GALVANIC SCALE
Anodic / Corroded End / Less Noble Materials
Zinc
Aluminum
Galvanized Steel
Cadmium
Mild Steel / Wrought Iron
Cast Iron
Stainless Steel, Types 304 & 316 (active)
Lead-tin Solder
Lead
Brass / Bronze
Copper
Stainless Steel, Types 304 & 316 (Passive)
Cathodic / Protected End / Noble Materials

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PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Avoid contact between metals that are farther apart in the scale.
- B. Do not couple a small exposed area of a less noble material with a large area of a more noble material.
- C. Coat noble metal with a suitable paint or other non-metallic coating or coat both surfaces at their interface with zinc chromate or bituminous coating.
- D. Separate the metals by tape, gasket, waterproof paper, elastomeric sheet, sealant or other non-absorptive, non-conductive material.
- E. Do not allow moisture run-off from noble material to drain onto less noble material.
- F. Do not use galvanized bolts, nuts or washers on stainless steel components.

3.2 METALS EMBEDDED IN CONCRETE

- A. Stainless steel.
 - 1. Use at interior areas exposed to high humidity.

END OF SECTION 050505

SECTION 050520 - POST INSTALLED STRUCTURAL ANCHORS

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. Wedge anchors
 - 2. Cartridge injection adhesive anchors
- B. This specification section is only intended for use when specifically required by the drawings or other referencing specifications and structural applications. This section is not intended for use in non-structural applications or where not specifically referenced by the drawings or other specification sections.
- C. Related Sections include the following:
 - 1. Division 01 Section "Quality Requirements" for independent testing agency procedures and administrative requirements.
 - 2. Division 05 Section "Structural Steel Framing" for anchorage of structural steel.
 - 3. Division 05 Section "Cold Formed Metal Framing" for anchorage of cold form metal framing where specifically detailed in the contract documents.
 - 4. Division 05 Section "Engineered Cold Formed Metal Framing" for anchorage of performance based cold form metal framing.

1.3 PERFORMANCE REQUIREMENTS

- A. The basis of design products are as specified in this specification or the contract documents. Product substitutions must have capacities equal to or greater than values calculated for each specific condition calculated when calculated using the data in the referenced ESR report and in accordance with the appropriate design procedure and standards required by the building code. See requirements for substitution submittals.

1.4 DEFINITIONS

- A. Post Installed Structural Anchors: Anchors supporting and/or anchoring structural elements of the building which are installed into hardened concrete or masonry and that are specified in the contract documents or performance based shop drawing design submittals for structural elements.

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- B. Wedge Anchors: A torque-controlled anchor, with an integral cone expander and single piece steel expansion clip providing 360-degree contact with the base material while not requiring oversized holes for installation and an impact section to prevent thread damage with required nuts and washers.
- C. Cartridge Injection Adhesive Anchors: An anchor system consisting of rod insert, nut, washer and a cartridge type, two-component polymer or hybrid mortar adhesive system dispensed and mixed through a static mixing nozzle supplied by the manufacturer.

1.5 SUBMITTALS

- A. Contractor's Statement of Responsibility Per Division 01 Section "Collective Inspections and Structural Testing"
- B. Product Data:
 - 1. Wedge Anchors
 - 2. Cartridge Injection Adhesive Anchors
- C. Research/Evaluation Reports:
 - 1. Submit ICC reports for the following:
 - a. Wedge Anchors
 - b. Cartridge Injection Adhesive Anchors
- D. Substitutions:
 - 1. Substitution requests may only be made using products with ICC-ESR reports for the product in the specific substrate.
 - 2. Substitution request shall include signed and sealed calculations demonstrating that the product is capable of providing equivalent performance of the specified product for each specific location and condition when calculated using the data in the referenced ESR report and in accordance with the appropriate design procedure and standards required by the building code.
 - 3. Substitution request shall specify the diameter and embedment depth of the substituted product
 - 4. Any increase in material labor cost resulting from the substitution shall be the responsibility of the contractor.
- E. Manufacturer's Instruction: Manufacturer's Installation Instructions
- F. Qualification Data: Submit installer qualification data as stated in Quality Assurance section. Qualifications shall be submitted in a letter format for each type of anchor to be installed, and shall include the following:
 - 1. The specific product to be used
 - 2. Complete description of installation procedure
 - 3. Personnel to be trained on anchor installation

4. Date of Manufacturer training
5. Manufacturer's training certificates or letter from manufacturer certifying training was complete with a list of individuals that were trained.

1.6 QUALITY ASSURANCE

- A. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."
 - a. Coordinate meeting with individual preinstallation conferences for the following
 - b. Structural Steel Framing
 - c. Cold-Formed Metal Framing
 - d. Rough Carpentry
- B. Installer Qualifications: The installer shall be experienced in installing anchors equal to type, and into the substrate material required for this project
- C. Installer Training: Conduct a thorough training session with the manufacturer's representative. Each individual responsible for the installation of anchors shall attend the training session. Training shall consist of a review of the complete process for the installation of the anchors and the use of proper equipment for drilling and installing the anchors, to include but not limited to:
 1. Hole drilling procedure. Clarify acceptability of rotary hammer drilling and/or core drilling.
 2. Hole drilling equipment
 3. Type and diameter of drill bits
 4. Hole preparation and hole cleaning technique
 5. Hole cleaning equipment
 6. Adhesive injection technique
 7. Adhesive injection equipment
 8. Anchor rod, nut and washer material requirements and associated cleaning requirements
 9. Anchor and Anchor rod installation
 10. Anchor tightening
 11. Adhesive curing requirements
- D. Certifications: All anchors shall have an ICC ESR Evaluation report indicating conformance with the current applicable Acceptance Criteria for the building code applicable to the project.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Keep anchors, rod materials, nuts and washers in manufacturer's packaging with label intact until needed for use.
- B. Keep anchors free of dirt and debris.
- C. Store anchors in a clean dry area
- D. Protect anchors from corrosion and deterioration.
- E. Store anchors and adhesives in strict accordance with manufacturer's requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Nuts: Having a proof load stress equal or greater than the minimum tensile strength of the associated anchor where type and strength is not specifically indicated by anchor or adhesive manufacturer.
- B. Washers: Of type and material compatible with nuts unless specifically indicated by anchor or adhesive manufacturer.
- C. Plate Washers: Provide ASTM A 36 plate washers of size and configuration specifically indicated.

2.2 CORROSION RESISTANCE

- A. Anchors and Anchor Bodies
 - 1. Uncoated Carbon Steel: Carbon steel anchors uncoated and free from oil, lubricants and other deleterious substances. Acceptable for use as follows:
 - a. Interior dry conditions
 - 2. Zinc Plated: Zinc plating in accordance with ASTM B633, Type III Fe/Zn 5 (SC1) Acceptable for use as follows:
 - a. Interior dry conditions
 - 3. Hot Dip Galvanized: Carbon steel anchors with hot-dipped galvanized in accordance with ASTM A 153. Acceptable for use as follows:
 - a. Interior dry conditions
 - b. Exterior conditions
 - c. Anchoring galvanized steel elements

4. Stainless Steel: AISI Type 304 or 316 stainless steel and complying with ASTM F 593. Acceptable for use as follows:
 - a. Anchoring treated lumber elements
 - b. Anchoring stainless steel elements
 - c. Anchoring aluminum elements or in contact with aluminum elements.

B. Nuts

1. Uncoated carbon steel: Acceptable for use as follows:
 - a. With Uncoated Anchors
2. Hot Dip Galvanized: Hot-dipped galvanized in accordance with ASTM A 153. Acceptable for use as follows:
 - a. With Zinc Plated Anchors
 - b. With Hot Dip Galvanized Anchors
3. Stainless Steel: ASTM F594. Acceptable for use as follows:
 - a. With Stainless Steel Anchors

C. Washers

1. Uncoated carbon steel: Acceptable for use as follows:
 - a. With uncoated anchors
2. Hot Dip Galvanized: Hot-dipped galvanized in accordance with ASTM A 153. Acceptable for use as follows:
 - a. With Hot Dip Galvanized Nuts
3. Stainless Steel: AISI Type 304 or 316 stainless steel. Acceptable for use as follows:
 - a. With Stainless Steel Nuts

D. Plate Washers:

1. Uncoated carbon steel: Acceptable for use as follows:
 - a. With Uncoated Nuts
2. Hot Dip Galvanized: Hot-dipped galvanized in accordance with ASTM A 153. Acceptable for use as follows:
 - a. With Hot Dip Galvanized Nuts

2.3 WEDGE ANCHORS

- A. Provide anchors with length identification markings conforming to ICC-ES AC01 or ICC-ES AC193 as appropriate based on the anchor substrate..
- B. Size: As indicated on drawings
- C. Embedment depth: As indicated on the drawings but not less than the manufacturer's documented minimum embedment depth. Where not specifically indicated use manufacturer's minimum documented embedment depth.
 - 1. Embedment depth is from surface of concrete or masonry. Anchor lengths and extent of threads shall account for embedment depth, connected elements, plate washers, washers, nut and appropriate stick thru.
- D. Concrete Anchors:
 - 1. Anchors shall be tested in accordance with ACI 355.2 and the most recent issue of ICC-ES AC193 including the following:
 - a. All mandatory testing
 - b. Shear and tension in cracked concrete.
 - c. Critical and minimum edge distances and spacing
 - 2. Anchors design shall be in accordance with ACI 318 Appendix D
 - 3. Where not specifically indicated otherwise in contract documents or approved performance based shop drawings submittal anchors shall be as follows:
 - a. Hilti Kwik Bolt TZ with nut and washer, of required finish, ICC ESR-1917
 - b. Approved equal (See substitution requirements)
- E. Masonry Anchors:
 - 1. Anchors for masonry shall be tested in accordance with most recent edition of ICC-ES AC01 including the following
 - a. All mandatory testing
 - b. Seismic tension and shear
 - c. Critical and minimum edge distances and spacing
 - 2. Anchors design shall be in accordance with ACI 530
 - 3. Where not specifically indicated otherwise in contract documents or approved performance based shop drawings submittal anchors shall be as follows:
 - a. Hilti Kwik Bolt 3 with nut and washer, of required finish, ICC ESR-1385.
 - b. Approved equal (See substitution requirements)

2.4 CARTRIDGE INJECTION ADHESIVE ANCHORS

- A. Provide anchors with length identification markings conforming to ICC-ES AC58 or ICC-ES AC308.

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- B. Size: As indicated on drawings
- C. Embedment depth: As indicated on the drawings but not less than the manufacturer's documented minimum embedment depth. Where not specifically indicated use manufacturer's minimum documented embedment depth.
 - 1. Embedment depth is from surface of concrete or masonry. Anchor lengths and extent of threads shall account for embedment depth, connected elements, plate washers, washers, nut and appropriate stick thru.
- D. Adhesive: Two component epoxy or two component hybrid system.
- E. Concrete Anchors:
 - 1. Anchors shall be tested in accordance with the most recent issue of ICC-ES AC308 including the following:
 - a. All mandatory testing
 - b. Shear and tension in cracked concrete.
 - c. Critical and minimum edge distances and spacing
 - 2. Anchors design shall be in accordance with ACI 318 Appendix D as amended by the specific design provisions of ICC-ES AC308
 - 3. Where not specifically indicated otherwise in contract documents or approved performance based shop drawings submittal anchors shall be as follows:
 - a. Rods, washers, and nuts of required finish with Hilti HIT RE 500 V3 Adhesive Anchorage System for anchorage to concrete, ICC ESR-3814.
 - b. Rods
 - 1) Carbon Steel Rods: ASTM A193 B7 coated as required for use
 - 2) Stainless Steel Rods: ASTM F593, CW
 - c. Approved equal (See substitution requirements)
 - 4. Where Hilti HIT-HY 200, ICC ESR-3187 system is specifically indicated in contract documents or approved performance based shop drawings submittal anchors shall be as follows:
 - a. For anchors 3/8" to 3/4" diameter: HIT-Z Standard or HIT-Z-R SS rods, washers, and nuts of required finish.
 - b. Approved equal (See substitution requirements)
- F. Masonry Anchors:
 - 1. Anchors for masonry shall be tested in accordance with most recent edition of ICC-ES AC58 including the following
 - a. All mandatory testing
 - b. Seismic tension and shear
 - c. Critical and minimum edge distances and spacing

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2. Anchors design shall be in accordance with ACI 530
3. Where not specifically indicated otherwise in contract documents or approved performance based shop drawings submittal anchors shall be as follows:
 - a. Grouted Masonry: HAS-E Standard or HAS SS rods, washers, and nuts of required finish with Hilti HIT HY 70 Adhesive Anchorage System for anchorage to masonry, ICC ESR-2682.
 - b. Approved equal (See substitution requirements)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance.
 1. Proceed with installation only after unsatisfactory conditions have been corrected.
 2. Installation constitutes acceptance of existing conditions and responsibility of satisfactory performance.

3.2 INSTALLATION, GENERAL

- A. Corrosion Resistance: Care shall be taken to ensure an anchor and associated accessories of the proper material and associated corrosion resistance are used for the specification application. See corrosion resistance requirements above.
- B. Where manufacturer recommends the use of special tools for installation of anchors, such tools shall be used.
- C. Match mark and drill, match drill or use other methods to ensure anchors are properly located.
- D. Do not adjust anchor location after installation. Coordinate with EOR for modifications to connected element where anchors are incorrectly located.
- E. All facets of hole drilling, hole cleaning, anchor installation, anchor torqueing shall be in strict accordance with the ICC-ESR report and manufacturer's data.
- F. Drill holes perpendicular to substrate surface.
- G. Drill holes with rotary impact hammer drills using carbide-tipped bits or core drills using diamond core bits as indicated in the ICC-ESR report.
- H. Drill bits and core bits shall be of diameters indicated in the ICC-ESR report.
- I. All holes shall be cleaned with compressed air to remove all drilling dust and other deleterious substances.

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- J. Remove water from holes to attain a surface dry condition unless specifically permitted otherwise by ICC-ESR report.
- K. Base Material Strength: Unless otherwise specified, do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
- L. Embedded Items: Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Exercise care in coring or drilling to avoid damaging existing reinforcing or embedded items. Notify the Engineer if reinforcing steel or other embedded items are encountered during drilling. Take precautions as necessary to avoid damaging prestressing tendons, electrical and telecommunications conduit, and gas lines.
- M. Perform anchor installation in strict accordance with manufacturer instructions and ICC-ES report.
- N. Anchors shall be installed perpendicular to the substrate face within plus or minus 5 degrees unless specifically permitted otherwise by ICC-ESR report.
- O. Install plate washers where specifically indicated or where connected elements have oversized holes.
- P. Install a round washer under nuts. Round washers are in addition to plate washers where plate washers are required.

3.3 WEDGE ANCHORS

- A. Protect threads from damage during anchor installation.
- B. Set anchors to manufacturer's recommended torque, using a torque wrench. Following attainment of 10% of the specified torque, 100% of the specified torque shall be reached within 7 or fewer complete turns of the nut. If the specified torque is not achieved within the required number of turns, the anchor shall be removed and replaced unless otherwise directed by the Engineer.

3.4 CARTRIDGE INJECTION ADHESIVE ANCHORS

- A. Clean all holes per manufacturer instructions using manufacturer's approved tools to remove loose material and drilling dust prior to installation of adhesive.
- B. Inject adhesive into holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive.
- C. Follow manufacturer recommendations to ensure proper mixing of adhesive components.
- D. Sufficient adhesive shall be injected in the hole to ensure that the annular gap is filled to the surface.

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- E. Remove excess adhesive from the surface.
- F. Shim anchors with suitable device to center the anchor in the hole.
- G. Do not disturb or load anchors before manufacturer specified cure time has elapsed.
- H. Observe manufacturer recommendations with respect to installation temperatures.
- I. Hilti HIT-HY200 system anchors shall be installed using the Hilti Safe Set Technology.
 - 1. For conditions using HAS rods the Hilti hollow drill bit and Hilt vacuum system shall be employed.

3.5 FIELD QUALITY CONTROL

- A. Testing and Inspection: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports in accordance with the schedule of special inspections.
- B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.6 REPAIRS AND PROTECTION

- A. Remove and replace misplaced or malfunctioning anchors. Fill empty anchor holes and patch failed anchor locations with high-strength non-shrink, nonmetallic grout. Anchors that fail to meet proof load or installation torque requirements shall be regarded as malfunctioning.
- B. Galvanizing Repairs: Prepare and repair damaged galvanized coatings with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- C. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer that ensure that cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 050520

SECTION 051200 - STRUCTURAL STEEL FRAMING

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. Structural steel.
2. Architecturally Exposed Structural Steel
3. Bearing Plates
4. Loose Lintels
5. Shelf Angles anchored to steel structure
6. Hung Lintels attached to the steel frame
7. Nonshrink Grout.

B. Products furnished, but not installed under this Section:

1. Loose Steel Lintels, installed under Division 04 Section "Unit Masonry"
2. Anchor rods with setting templates and embed plates indicated to be built into masonry, installed under Division 04 Section "Unit Masonry".
3. Anchor rods with setting templates and embed plates indicated to be cast into cast-in-place concrete, installed under Division 03 Section "Cast-in-place-Concrete"

C. Related Sections:

1. Division 01 Section "Quality Requirements" for independent testing agency procedures and administrative requirements.
2. Division 05 Section "Metal Stairs."
3. Division 05 Section "Post Installed Structural Anchors" for wedge, and adhesive anchors
4. Division 09 painting Sections and Division 09 Section "High-Performance Coatings" for special surface-preparation and priming requirements.

1.3 DEFINITIONS

- A. Structural Steel: Elements of structural-steel frame, as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges" and as modified herein.
- B. Architecturally Exposed Structural Steel (AESS): Structural steel designated as architecturally exposed structural steel in the Contract Documents.

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- C. Seismic-Force-Resisting System: Elements of structural-steel frame designated as "SFRS" or along grid lines designated as "SFRS" on Drawings, including columns, beams, and braces and their connections.
- D. Demand Critical Welds: Those welds, the failure of which would result in significant degradation of the strength and stiffness of the Seismic-Force-Resisting System.
 - 1. PJP and CJP welds of columns to column base plates.
 - 2. PJP and CJP welds of SFRS beam flanges to columns
 - 3. PJP and CJP welds of SFRS sing plate shear connections to columns
 - 4. PJP and CJP welds of SFRS beam webs to columns
 - 5. PJP and CJP welds of SFRS column splices
 - 6. Other welds specifically noted as demand critical in the applicable sections of the AISC Seismic Provisions
 - 7. Other welds specifically indicated on drawings
 - 8. Other welds specifically noted as demand critical in prequalified connection criteria.

1.4 PERFORMANCE REQUIREMENTS

- A. Connections: Provide details of connections required by the Contract Documents to be selected or completed by structural-steel fabricator, including comprehensive engineering design by a qualified professional engineer, to withstand loads indicated and comply with other information and restrictions indicated.
 - 1. Select and complete connections using AISC 360 .
 - 2. Use LRFD; data are given at factored-load level.
 - 3. All bolted connections for bracing members shall be designed and fabricated as slip critical connections to allow for field reaming of holes to address fit up issues.
 - 4. The minimum number of bolts for any connection shall be two.
 - 5. All steel to steel connections shall extend at least two thirds of the depth of the supported member being connected.
 - 6. All connections shall be designed to fit within the confines of concealed spaces unless specifically noted as acceptable to be exposed to view.
 - 7. Connections shall allow for flush deck bearing at top flange of all beams beneath deck. If cover or flange plates are used a method for flush deck support around the cover/flange plate shall be provided at no cost to the owner.

1.5 SUBMITTALS

- A. Contractor's Statement of Responsibility Per Division 01 Section "Collective Inspections and Structural Testing"
- B. Fabricator's Certificate of Compliance Per Division 01 Section "Collective Inspections and Structural Testing"
- C. Quality Control Plan: Job specific Quality Control Plan for Fabricator, Erector including qualification data for the following:

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1. Fabricator
 - a. Testing personnel.
 - b. Inspection personnel
 2. Erector
 - a. Inspection personnel
- D. Weekly Inspection reports for Shop Fabricated Steel
- E. Nonconformance reports for Shop Fabricated Steel
- F. Product Data:
1. Primers
 2. Paints
 3. Electrodes
 - a. Indicate what welding process will be used with each electrode
 - b. Submit electrodes for both shop and field welding
 - c. Indicate compliance with AWS D1.8 Clause 6.3 for electrodes used in both SFRS Connections and Demand Critical Welds
 4. Bolts, nuts, and washers including mechanical properties and chemical analysis.
 5. Direct-tension indicators.
 6. Tension-control, high-strength bolt-nut-washer assemblies.
 7. Shear stud connectors.
 8. Deformed bar anchors.
 9. Nonshrink grout.
 10. Post installed structural anchors: See specification section 050520
- G. Shop Drawings: Show fabrication of structural-steel components.
1. All anchor rods shall be detailed with a minimum 3" projection above top of nut in the final installed condition unless noted otherwise.
 2. Include min. 1/8" anchor rod setting templates. Detail quantity of templates such that there is one template for each bolt group. (Templates should not be reused).
 3. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
 4. Splice members where indicated in the contract documents and as required to facilitate fabrication and erection. Coordinate splice locations within the limitations of referenced standards subject to approval of the Engineer of Record.
 5. Include embedment drawings showing plan location and elevation of all embedded items.
 6. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
 7. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections.
 8. Include scale drawings of all gusset plates.
 9. Provide minimum 1/4" thick cap plates at the ends of all exposed HSS members, and at the top of all HSS columns.

10. Equally space filler beams or joists between columns and/or other dimensioned beams unless noted otherwise.
11. Where delegated design submittals are required the delegated design submittal must be included with associated shop drawings or the submittal will not be reviewed.
12. Identify members and connections of the seismic-force-resisting system.
13. Identify demand critical welds.
14. All bolts shall use standard or holes or short-slotted holes (perpendicular to the applied load).
15. All bolts in the SFRS shall be detailed and installed as pretensioned high-strength bolts
16. Faying surfaces in all SFRS member bolted connections shall be satisfy the requirements for slip-critical connections with faying surfaces having a class A slip coefficient or higher.

H. Delegated-Design Submittal:

1. Steel to Steel Connections:

- a. For structural steel connections indicated to comply with design loads provide structural design data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 1) Coordinate with Engineer of Record loading requirements at all steel to steel connections where not specifically indicated on the contract documents.
 - 2) Coordinate with Engineer of Record for loading requirements at all splice locations
 - 3) Each individual calculation shall be clearly labeled in coordination with erection drawings such that it identifies the member(s) that the connection applies to.
- b. Professional Engineer's Statement: A written statement indicating that the for fabrication shop drawings incorporate all the connection requirements included in the calculations submitted for approval inclusive of any corrections required in response to shop drawing review comments. The statement shall be prepared by, and signed and sealed by the professional engineer that completed the calculations submittal.
- c. The calculations must be included with the associated shop drawing submittal or the submittal will not be reviewed.

I. Slip Critical Bolt Installation Statement: A written statement indicating the means and equipment to be used to achieve the tightening requirements for clip critical bolt installation. Statement shall identify the specific pre-installation required by the special inspections and acknowledge that this testing must be coordinated and completed prior to commencement of erection.

J. As-built anchor rod and embed survey

K. Welding certificates

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1. Submit welding certificates for all individuals expected to be performing field welding
 - L. Welding Procedure Specifications (WPS's) and Procedure Qualification Records (PQRs): Provide according to AWS D1.1/D1.1M, "Structural Welding Code - Steel," for each field welded joint whether prequalified or qualified by testing, including the following:
 1. Power source (constant current or constant voltage).
 2. Electrode manufacturer and trade name, for demand critical welds.
 - M. Qualification Data:
 1. Fabricator
 2. Structural Steel Erector
 3. Post Installed Structural Anchor Installer: See specification section 050520
 - N. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.
 - O. Research/Evaluation Reports:
 1. Post Installed Structural Anchors per specification section 050520
 - P. Material Test Reports
 - Q. Minutes of preinstallation conference.
- 1.6 QUALITY ASSURANCE
- A. Quality Control Plan: Each fabricator and Erector shall provide a job specific Quality Control plan.
 1. The plan shall specifically identify all QC and QA inspections the fabricator and erector will be completing, the frequency of those inspections and the contractor's personnel and/or contractor's testing agency that will be completing the specific inspections.
 2. AISC Code of Standard Practice
 3. The plan shall comply with AISC 360-10 chapter N modified as follows:
 - a. 100% UT of CJP groove welds without reduction.
 4. The plan shall comply with AWS D1.1
 5. The plan shall comply with the requirements of AISC 341-10 Chapter J,
 6. The plan shall comply with AWS D1.8.
 7. The plan shall include any additional inspections or testing identified in the contract documents.
 - B. Connection Design Engineer
 1. Responsibility: Preparation of design calculations for structural steel connections

2. Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated.
- C. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category BU (Certified Building Fabricator) and which employs personnel or an independent testing agency that are qualified to complete all the required inspections and testing. Personnel shall be qualified as required by AWS D1.1 where completing weld testing and inspection.
1. Fabricator Responsibility
 - a. The structural steel fabricator shall be responsible for enlisting the Steel Joist fabricator as a direct subcontractor.
 - b. The structural steel fabricator shall be responsible for enlisting the Steel Deck fabricator for steel deck bearing on structural steel or steel joists as a direct subcontractor.
 - c. The structural steel fabricator shall be responsible for enlisting the steel erector as a direct subcontractor.
 - d. The structural steel fabricator shall be responsible for enlisting the steel joist erector as a direct subcontractor.
 - e. The structural steel fabricator shall be responsible for enlisting the steel deck erector for steel bearing on structural steel or steel joists as a direct subcontractor.
- D. Fabricator's Testing Agency (as required to supplement fabricator personnel): An independent agency, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated. Personnel shall be qualified as required by AWS D1.1 where completing weld testing and inspection.
- E. Structural Steel and Architectural Structural Steel Installer Qualifications: The erector shall be experienced in installing structural steel equal in material, design and scope to the structural steel required for this project.
- F. Post Installed Structural Anchor Installer: See specification section 050520 for requirements
- G. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.
- H. Comply with applicable provisions of the following specifications and documents:
1. AISC 303.
 2. AISC 341-10
 3. AISC 360.

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4. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

I. Preinstallation Conference: Conduct conference at Project site.

1. Review special inspection and testing and inspecting agency procedures for field quality control.
2. Review items requiring special inspection and testing that must be tested and inspected prior to installation of decking, concrete slabs, or other items that might limit access to the item to be tested or inspected
3. Review welding requirements
4. Review electrode storage requirements
5. Review pre-construction bolt installation verification
6. Review bolt installation calibration requirements

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.

1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.

1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
2. Clean and relubricate bolts and nuts that become dry or rusty before use.
3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

1.8 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation. Provide min. 1/8" thick setting template for anchor rods.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

A. W-Shapes and Tees: ASTM A 992.

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B. Channels, Angles-Shapes:

1. ASTM A 36 unless noted otherwise
2. ASTM A 572/A 572M, Grade 50 where indicated.

C. Plate and Bar:

1. ASTM A 36 unless noted otherwise
2. ASTM A 572/A 572M, Grade 50 where indicated.

D. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.

1. Square or Rectangular HSS: $F_y=50$ KSI
2. Round HSS: $F_y=42$ KSI

E. Welding Electrodes:

1. Comply with AWS D1.1 requirements.
2. In addition all weld filler metal for SFRS connections shall comply with AWS D1.8 Clause 6.3
3. In addition all weld filler metal for Demand Critical Welds shall comply AWS D1.8 Clause 6.3

2.2 BOLTS, CONNECTORS, AND ANCHORS

A. High-Strength Bolts, Nuts, and Washers: ASTM F 3125 Grade A325 or Grade A490 as indicated or as required, Type 1, heavy hex steel structural bolts; ASTM A563 heavy hex carbon-steel nuts; and ASTM F436 hardened carbon-steel washers.

1. Finish:

- a. Unprimed, Primed or painted steel: Plain
- b. Hot Dip Galvanized Steel:

1) Bolts

- a) Grade A325: ASTM F 2329 Hot-dip zinc coating
- b) Grade A490: ASTM F1136 Grade 3 Zinc/Aluminum Coating

2) Nuts: ASTM F2329 Hot-dip zinc coating

3) Washers: ASTM F2329 Hot-dip zinc coating

4) Plate Washers: ASTM A123 Hot-dip zinc coating

2. Direct-Tension Indicators (At Contractor's option for Pretensioned or Slip Critical Connections): ASTM F959, Type 325 or Type 490 corresponding to bolt type, compressible-washer type.

a. Finish:

1) Unprimed, Primed or painted steel: Plain

2) Hot Dip Galvanized Steel: Mechanically deposited zinc coating, ASTM B695, Class 50

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- B. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 3125 Grade F1852 or Grade F2280 as indicated or as required, Type 1, heavy hex or round head steel structural bolts with splined ends; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.
 - 1. Finish:
 - a. Unprimed, Primed or painted steel: Plain
 - b. Hot Dip Galvanized Steel: Not permitted.
- C. Threaded Rods: ASTM A 36 unless noted otherwise.
 - 1. Nuts: ASTM A 563 heavy hex carbon steel.
 - 2. Washers: ASTM A 36/A 36M carbon steel.
 - 3. Finish:
 - a. Plain for unprimed steel or steel receiving standard shop primer.
 - b. Hot-dip zinc coating, ASTM A 153/A 153M, Class C for hot galvanized steel or steel to receive high performance top coating.
- D. Post Installed Structural Anchors: See specification section 055020 for products

2.3 PRIMER

- A. Standard Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer.
 - 1. Typical all primed steel unless noted otherwise
- B. Special Primer: Provide shop primer that complies with Division 09 painting Sections. Section "High-Performance Coatings" as applicable.

2.4 PAINT

- A. Column Base Paint: A single component, self-priming cold applied Coal Tar Mastic suitable for corrosion protection of below grade steel.
 - 1. Typical at column bases at exterior locations and/or as specifically noted on drawings.
- B. Galvanizing Repair Paint: ASTM A 780.

2.5 NONSHRINK GROUT

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.6 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.

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1. Camber structural-steel members where indicated.
 2. Fabricate beams with rolling camber up.
 3. Identify high-strength structural steel according to ASTM A 6/A 6M and maintain markings until structural steel has been erected.
 4. Mark and match-mark materials for field assembly.
 5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.
- B. Architecturally Exposed Structural Steel: Comply with fabrication requirements, including tolerance limits, of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for structural steel identified as architecturally exposed structural steel.
1. Fabricate with exposed surfaces smooth, square, and free of surface blemishes including pitting, rust, scale, seam marks, roller marks, rolled trade names, and roughness.
 2. Remove blemishes by filling or grinding or by welding and grinding, before cleaning, treating, and shop priming.
- C. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.
- D. Bolt Holes: Cut, drill, mechanically thermal cut, or punch standard bolt holes perpendicular to metal surfaces.
- E. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.
- F. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel framing members.
1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not enlarge holes by burning.
 2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
 3. Weld threaded nuts to framing and other specialty items indicated to receive other work.
- ### 2.7 SHOP CONNECTIONS
- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
1. Joint Type:
 - a. Snug tightened unless noted otherwise
 - b. Slip critical, class "A" for all members of the SFRS.
- B. Weld Connections:

1. Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
2. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.
3. Elements that are part of the SFRS:
 - a. Comply with AISC 341-10, AWS D1.1/D1.1M and AWS D1.8/D1.8M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
4. Demand Critical Welds:
 - a. Comply with AISC 341-10, AWS D1.1/D1.1M and AWS D1.8/D1.8M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
5. Architecturally Exposed Structural Steel: Verify that weld sizes, fabrication sequence, and equipment used for architecturally exposed structural steel will limit distortions to allowable tolerances. Prevent weld show-through on exposed steel surfaces.
 - a. Grind butt welds flush.
 - b. Grind or fill exposed fillet welds to smooth profile. Dress exposed welds.

2.8 CLEANING

- A. Clean and prepare faying surfaces in class "B" slip critical connections according to SPSC-SP6 "Commercial Blast Cleaning."
- B. Clean and prepare steel surfaces in class "A" slip critical connections that are to remain unprimed according to SSPC-SP 2, "Hand Tool Cleaning" unless noted otherwise.
- C. Clean and prepare steel surfaces that are to remain unprimed according to SSPC-SP 2, "Hand Tool Cleaning" unless noted otherwise.
- D. Clean and prepare steel surfaces in class "A" slip critical connections that are to be primed according to SPSC-SP6, "Commercial Blast Cleaning."
- E. Clean and prepare steel surfaces that are to receive standard primer according to SSPC-SP 3, "Power Tool Cleaning."
- F. Clean and prepare steel surfaces that are to receive special primer according to the associated painting specification. When not specifically noted the minimum cleaning shall be SSPC-SP 6, "Commercial Blast Cleaning."

2.9 STANDARD PRIMING

- A. Shop prime steel surfaces except the following:
 - 1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
 - 2. Surfaces to be field welded.
 - 3. Surfaces to be high-strength bolted with slip-critical connections.
 - 4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
 - 5. Galvanized surfaces.
 - 6. Top flanges of beams to receive field welded headed studs
- B. Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
- C. Stripe paint corners, crevices, bolts, welds, and sharp edges.
- D. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

2.10 SPECIAL PRIMING:

- A. All steel located in exterior spaces shall be shop primed per Division 09 Section ["High Performance Coatings", "Exterior Painting"]
- B. All steel located in interior spaces but to remain exposed shall be shop primed per Division 09 Section [Interior Painting]
- C. All architecturally exposed structural steel in interior spaces shall be shop primed per Division 09 Section [Interior Painting]
- D. All architecturally exposed structural steel located in exterior spaces shall be shop primed per Division 09 Section ["High Performance Coatings", "Exterior Painting"]
- E. Priming of steel noted as architecturally exposed structural steel shall be done with extreme care to avoid drips and runs.

2.11 GALVANIZING

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/A 123M.
 - 1. Fill vent and drain holes that will be exposed to the environment or that will be exposed in the finished work by plugging with zinc solder and filing off smooth.
 - 2. Galvanize loose and hung lintels, shelf angles, all exposed exterior steel and all steel located in exterior masonry walls unless noted otherwise. Coordinate with drawings and specifications.

- a. Galvanized elements to be top coated shall not be quenched, and shall be swept blast to ensure proper adhesion of top coats.

2.12 SOURCE QUALITY CONTROL

- A. Testing Agency: Owner will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.
 1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections
 2. The cost for reinspecting deficient work shall be the responsibility of the fabricator
- B. All source quality control and source quality assurance shall be completed by the fabricator's qualified personnel and/or the fabricator's qualified testing agency and shall be in accordance with the submitted and approved job specific quality control manual.
 1. Additional weld inspections as noted herein or in the contract documents.
 2. Payment for shop testing and inspection shall be the responsibility of the fabricator.
- C. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- D. Bolted Connections: Shop-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- E. Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1/D1.1M.
- F. In addition to visual inspection, shop-welded shear connectors will be tested and inspected according to requirements in AWS D1.1/D1.1M for stud welding and as follows:
 1. Bend tests will be performed if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
 2. Tests will be conducted on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1/D1.1M.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify, with steel Erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
 1. Prepare a certified as-built survey of bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.

3.3 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
- B. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
 - 1. Where ungrouted anchor rod sleeves are required caulk the annular surface between the sleeve and the anchor rod to prevent grout from entering the sleeves.
 - 2. Set plates for structural members on wedges, shims, or setting nuts as required. All shims shall be steel material.
 - 3. Weld plate washers to top of baseplate as indicated.
 - 4. Snug-tighten anchor rods after supported members have been positioned and plumbed.
 - 5. Bearing plates and loose column base plates shall be grouted and cured prior to erecting the steel to be supported by the plate
 - 6. Base plates attached to columns shall be grouted as soon as possible after the column has been plumbed. Base plates shall be grouted and cured before any elevated slabs are cast or before any column splices are made.
 - 7. Prior to grouting all loose and latent material shall be removed from bearing surfaces and base or bearing plates. Concrete or masonry surfaces shall be broom clean. All shims or wedges shall be left in place and cut flush to the edge of the base or bearing plate.
 - 8. Grout shall be placed solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation and curing instructions for shrinkage-resistant grouts.
 - a. Use grout forms and grout surcharging as required to ensure that grout completely fills the space below bearing or base plate, and no voids remain.
 - 9. Paint base plates, anchor bolts and sections of columns below grade and below finished floor with Coal Tar Mastic Paint when indicated on drawings.
- C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."
- D. Maintain erection tolerances of architecturally exposed structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

- E. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 1. Level and plumb individual members of structure.
 - 2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.
- F. Splice members only where indicated on approved shop drawings.
- G. Remove erection bolts on welded, architecturally exposed structural steel; fill holes with plug welds; and grind smooth at exposed surfaces.
- H. Do not use thermal cutting during erection unless approved by Architect. Finish thermally cut sections within smoothness limits in AWS D1.1/D1.1M.
- I. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.
 - 1. For slip critical connections enlarge hole to next standard hole size and provide next standard bolt size.
- J. Shelf Angles anchored to steel frame:
 - 1. Sequencing of shelf angle installation shall be as indicated in drawings
 - 2. Unless noted otherwise do not permanently attach shelf angles until concrete slabs have been poured and cured.
 - 3. Once slabs have been poured and cured coordinate final elevation of shelf angle with contract documents and masonry contractor and permanently fasten.
- K. Pour stops and edge angles: Pour stops and edge angles shall be field installed based on global building control lines to ensure overall building geometry is maintained.
 - 1. Do not located based on local member geometry.

3.4 FIELD CONNECTIONS

- A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: As indicated on shop drawings.
- B. Finger Tight Bolts: All joints noted as finger tight shall be hand tightened as required to install elements. Do not tighten by mechanical means
 - 1. Provide jam nuts to prevent nut from backing off.
 - 2. After initial tightening turn nut and jam nut in opposite direction to bind them against one another.
- C. Weld Connections:

1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
2. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.
3. Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
4. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.
5. Elements that are part of the SFRS:
 - a. Comply with AISC 341-05 Appendix W, AWS D1.1/D1.1M and AWS D1.8/D1.8M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
6. Architecturally Exposed Structural Steel: Verify that weld sizes, fabrication sequence, and equipment used for architecturally exposed structural steel will limit distortions to allowable tolerances. Prevent weld show-through on exposed steel surfaces.
 - a. Grind butt welds flush.
 - b. Grind or fill exposed fillet welds to smooth profile. Dress exposed welds.

D. Post Installed Structural Anchors: See specification section 050520 for products

3.5 FIELD PAINTING

- A. Column bases: Paint column bases below grade and/or below finished floor at exterior conditions and/or conditions specifically noted on drawings with column base paint.
 1. Apply in strict accordance with manufacturer's recommendations
 2. Apply multiple coats as required by manufacturer, but not less than two individual coats allowing proper dry time between coats.
- B. Field painting of structural steel for finished appearance in exposed conditions or for high performance coating systems is specified in Division 09 painting sections.

3.6 FIELD QUALITY CONTROL

- A. The erector shall complete Field Quality control in accordance with AISC 360 Chapter N
- B. The erector shall complete Field Quality control in accordance with AISC 341-10 Chapter J
- C. Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports in accordance with the schedule of special inspections.
- D. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

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- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements when the work was deemed deficient upon initial testing or inspection.

3.7 REPAIRS AND PROTECTION

- A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A 780.
 - 1. The coating thickness for zinc-rich paint repairs must be 50% higher than the surrounding coating thickness, but not less than 2.0 mils and not greater than 4.0 mils.
 - 2. The repaired surface should be free of lumps, coarse areas and loose particles
- B. Touchup Painting: At all exterior and exposed interior conditions promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted joists, bearing plates, abutting structural steel, and accessories.
 - 1. Clean and prepare surfaces by hand-tool cleaning, SSPC-SP 2, or power-tool cleaning, SSPC-SP 3.
 - 2. Apply a primer of same type as shop primer used on adjacent surfaces. Coordinate with Part 2 priming requirements

END OF SECTION 051200

SECTION 055213 - PIPE AND TUBE RAILINGS

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. Galvanized steel railings.

1.3 RELATED SECTIONS

- A. See section 099113 "Exterior Painting for painting exterior galvanized steel railings.

1.4 COORDINATION

- A. Coordinate installation of anchorages for railings. 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.

1.5 ACTION SUBMITTALS

- A. Product Data:
 - 1. Post-installed anchors.
 - 2. Handrail brackets.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Delegated-Design Submittal: For railings, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For delegated-design professional engineer.
- B. Welding certificates.

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- C. Research Reports: For post-installed anchors, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

1.7 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel in accordance with the following:
 - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.8 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified licensed professional engineer to design railings, including attachment to building construction.
- B. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Handrails and Top Rails of Guards:
 - a. Uniform load of 50 lbf/ ft. (0.73 kN/m) applied in any direction.
 - b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
 - 2. Infill of Guards:
 - a. Concentrated load of 50 lbf (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m).
 - b. Infill load and other loads need not be assumed to act concurrently.

2.2 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

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1. Provide type of bracket with predrilled hole for exposed bolt anchorage and that provides 1-1/2-inch (38-mm) clearance from inside face of handrail to finished wall surface.

2.3 STEEL RAILINGS

- A. Pipe: ASTM A53/A53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
- B. Plates, Shapes, and Bars: ASTM A36/A36M.
- C. Cast Iron Fittings: Either gray iron, ASTM A48/A48M, or malleable iron, ASTM A47/A47M, unless otherwise indicated.

2.4 FASTENERS

- A. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction and capable of withstanding design loads.
- B. Fasteners for Interconnecting Railing Components:
 1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.
 2. Provide Phillips flat-head machine screws for exposed fasteners unless otherwise indicated.
- C. Post-Installed Anchors: Fastener systems with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193 or ICC-ES AC308.
 1. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.
 2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 (A1) stainless steel bolts, ASTM F593, and nuts, ASTM F594.

2.5 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select in accordance with AWS specifications for metal alloy welded.
 1. For railings, provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.
- B. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout, complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.6 FABRICATION

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations.
 - 1. Clearly mark units for reassembly and coordinated installation.
 - 2. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately.
 - 1. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated.
 - 2. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- F. Connections: Fabricate railings with welded or nonwelded connections unless otherwise indicated.
- G. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
 - 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 flux immediately.
 - 4. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #2 welds; good appearance, completely sanded joint, some undercutting and pinholes okay.
- H. Form changes in direction as follows:
 - 1. As detailed.
 - 2. By flush bends or by inserting prefabricated flush-elbow fittings.
- I. Bend members in jigs to produce uniform curvature for each configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- J. Close exposed ends of hollow railing members with prefabricated cap and end fittings of same metal and finish as railings.

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- K. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
- L. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work.
 - 1. Fabricate anchorage devices capable of withstanding loads imposed by railings.
 - 2. Coordinate anchorage devices with supporting structure.

2.7 STEEL AND IRON FINISHES

- A. For nongalvanized-steel railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves; however, hot-dip galvanize anchors to be embedded in exterior concrete or masonry.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Perform cutting, drilling, and fitting required for installing railings.
 - 1. Fit exposed connections together to form tight, hairline joints.
 - 2. Install railings level, plumb, square, true to line; without distortion, warp, or rack.
 - 3. Set railings accurately in location, alignment, and elevation; measured from established lines and levels.
 - 4. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
 - 5. Set posts plumb within a tolerance of 1/16 inch in 3 feet (2 mm in 1 m).
 - 6. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet (6 mm in 3.5 m).
- B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
- C. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- D. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.2 RAILING CONNECTIONS

- A. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article, whether welding is performed in the shop or in the field.

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3.3 ANCHORING POSTS

- A. Anchor posts to metal surfaces with flanges, angle type, or floor type, as required by conditions, connected to posts and to metal supporting members as follows:
 - 1. For steel railings, weld flanges to post and bolt to metal supporting surfaces.

3.4 ATTACHING RAILINGS

- A. Anchor railing ends to concrete and masonry with sleeves concealed within railing ends and anchored to wall construction with anchors and bolts.

3.5 REPAIR

- A. Touchup Painting:
 - 1. Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
 - a. Apply by brush or spray to provide a minimum 2.0-mil (0.05-mm) dry film thickness.

3.6 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.
- B. Restore finishes damaged during installation and construction period, so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION 055213

SECTION 061000 - ROUGH CARPENTRY

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. Wood blocking and nailers.
 2. Wood furring and grounds.
 3. Plywood backing panels.

1.3 DEFINITIONS

- A. Boards or Strips: Lumber of less than 2 inches nominal (38 mm actual) size in least dimension.
- B. Dimension Lumber: Lumber of 2 inches nominal (38 mm actual) size or greater but less than 5 inches nominal (114 mm actual) size in least dimension.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

1.5 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For the following, from ICC-ES:

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1. Wood-preservative-treated wood.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 1. Factory mark each piece of lumber with grade stamp of grading agency.
 2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece.
 3. Dress lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWP A U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.
 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
 1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.
- D. Application: Treat all rough carpentry unless otherwise indicated.

2.3 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Blocking.
 - 2. Nailers.
 - 3. Rooftop equipment bases and support curbs.
 - 4. Cants.
 - 5. Furring.
 - 6. Grounds.
 - 7. Utility shelving.
- B. Dimension Lumber Items: Construction or No. 2 grade lumber of any of the following species:
 - 1. Mixed southern pine or southern pine; SPIB.
 - 2. Spruce-pine-fir; NLGA.
 - 3. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
- C. Utility Shelving: Lumber with 19 percent maximum moisture content of any of the following species and grades:
 - 1. Eastern white pine, Idaho white, lodgepole, ponderosa, or sugar pine; Standard or No. 3 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
- D. Concealed Boards: 19 percent maximum moisture content and the following species and grades:
 - 1. Mixed southern pine or southern pine; No. 2 grade; SPIB.
 - 2. Spruce-pine-fir (south) or spruce-pine-fir; Construction or No. 2 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
 - 3. Western woods; Construction or No. 2 Common.
- E. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- F. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- G. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.4 PLYWOOD BACKING PANELS

- A. Equipment Backing Panels: Plywood, DOC PS 1, Exterior, A-C in thickness indicated or, if not indicated, not less than 3/4-inch (19-mm) nominal thickness.

2.5 FASTENERS

- A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.
 - 1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners of Type 304 stainless steel.
- B. Nails, Brads, and Staples: ASTM F1667.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

2.6 MISCELLANEOUS MATERIALS

- A. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch (0.6 mm).
- B. Adhesives for Gluing Furring and Sleepers to Concrete or Masonry: Formulation complying with ASTM D3498 that is approved for use indicated by adhesive manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- B. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels.
- C. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- D. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
 - 1. Use inorganic boron for items that are continuously protected from liquid water.
 - 2. Use copper naphthenate for items not continuously protected from liquid water.

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- E. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- F. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).
 - 2. ICC-ES evaluation report for fastener.
- G. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 INSTALLATION OF WOOD BLOCKING AND NAILERS

- A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

3.3 INSTALLATION OF WOOD FURRING

- A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.
- B. Furring to Receive Plywood or Hardboard Paneling: Install 1-by-3-inch nominal- (19-by-63-mm actual-) size furring horizontally and vertically at 24 inches (610 mm) o.c.

3.4 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet enough that moisture content exceeds that specified, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

SECTION 062013 - EXTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Plywood soffit/ceiling.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials, dimensions, profiles, textures, and colors and include construction and application details.
 - 1. Include data for wood-preservative treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained. Include chemical-treatment manufacturer's written instructions for finishing treated material.
 - 2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced before shipment to Project site to levels specified.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber, plywood, and other panels flat with spacers between each bundle to provide air circulation.
 - 1. Protect materials from weather by covering with waterproof sheeting, securely anchored.
 - 2. Provide for air circulation around stacks and under coverings.

1.4 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecast weather conditions permit work to be performed and at least one coat of specified finish can be applied without exposure to rain, snow, or dampness.
- B. Do not install finish carpentry materials that are wet, moisture damaged, or mold damaged.
 - 1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with applicable rules of any rules-writing agency certified by the American Lumber Standard Committee's (ALSC) Board of Review. Grade lumber by an agency certified by the ALSC's Board of Review to inspect and grade lumber under the rules indicated.
 - 1. Factory mark each piece of lumber with grade stamp of inspection agency, indicating grade, species, moisture content at time of surfacing, and mill.
- B. Softwood Plywood: DOC PS 1.
- C. Hardboard: ANSI A135.4.

2.2 PLYWOOD SOFFITS

- A. Plywood Type: Exterior, Grade A-C.
- B. Thickness: 3/4 inch.
- C. Face Species: Southern pine.
- D. Pattern: Plain.
- E. Surface: Smooth.

2.3 MISCELLANEOUS MATERIALS

- A. Fasteners for Exterior Finish Carpentry: Provide nails or screws, in sufficient length to penetrate not less than 1-1/2 inches (38 mm) into wood substrate.
 - 1. For applications not otherwise indicated, provide stainless steel fasteners.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine finish carpentry materials before installation. Reject materials that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.

3.3 INSTALLATION, GENERAL

- A. Do not use materials that are unsound, warped, improperly treated or finished, inadequately seasoned, or too small to fabricate with proper jointing arrangements.
 - 1. Do not use manufactured units with defective surfaces, sizes, or patterns.
- B. Install exterior finish carpentry level, plumb, true, and aligned with adjacent materials.
 - 1. Use concealed shims where necessary for alignment.
 - 2. Scribe and cut exterior finish carpentry to fit adjoining work.
 - 3. Refinish and seal cuts as recommended by manufacturer.
 - 4. Install to tolerance of 1/8 inch in 96 inches (3 mm in 2438 mm) for level and plumb. Install adjoining exterior finish carpentry with 1/32-inch (0.8-mm) maximum offset for flush installation and 1/16-inch (1.5-mm) maximum offset for reveal installation.
 - 5. Coordinate exterior finish carpentry with materials and systems in or adjacent to it.
 - 6. Provide cutouts for mechanical and electrical items that penetrate exterior finish carpentry.

3.4 ADJUSTING

- A. Replace exterior finish carpentry that is damaged or does not comply with requirements.
 - 1. Exterior finish carpentry may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.
- B. Adjust joinery for uniform appearance.

3.5 CLEANING

- A. Clean exterior finish carpentry on exposed and semiexposed surfaces.

3.6 PROTECTION

- A. Protect installed products from damage from weather and other causes during construction.
- B. Remove and replace finish carpentry materials that are wet, moisture damaged, and mold damaged.

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1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 062013

SECTION 074113 - METAL ROOF PANELS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Exposed fastener metal roof panels, with related metal trim and accessories.

1.2 RELATED REQUIREMENTS

- A. Division 05 Section "Structural Steel Framing" for structural steel framing supporting metal panels.
- B. Division 05 Section "Cold-Formed Metal Framing" for cold-formed metal framing supporting metal panels.
- C. Division 07 Section "Sheet Metal Flashing and Trim" for formed sheet metal copings, flashings, reglets, and roof drainage items in addition to items specified in this Section.
- D. Division 07 Section "Joint Sealants" for field-applied Joint Sealants.

1.3 REFERENCES

- A. American Architectural Manufacturer's Association (AAMA): www.aamanet.org:
 - 1. AAMA 621 - Voluntary Specifications for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) & Zinc-Aluminum Coated Steel Substrates.
 - 2. AAMA 809.2 - Voluntary Specification Non-Drying Sealants.
- B. American Society of Civil Engineers (ASCE): www.asce.org/codes-standards:
 - 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- C. ASTM International (ASTM): www.astm.org:
 - 1. ASTM A 653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 2. ASTM A 755 - Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
 - 3. ASTM A 792/A 792M - Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
 - 4. ASTM C 645 - Specification for Nonstructural Steel Framing Members.
 - 5. ASTM C 754 - Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
 - 6. ASTM C 920 - Specification for Elastomeric Joint Sealants.
 - 7. ASTM D 1003 - Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics.

8. ASTM D 2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
9. ASTM D 4214 - Test Methods for Evaluating Degree of Chalking of Exterior Paint Films.
10. ASTM E 1646 - Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.
11. ASTM E 1680 - Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems.
12. ASTM E 1980 - Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

D. Underwriters Laboratories, Inc. (UL): www.ul.com:

1. UL 580 - Tests for Uplift Resistance of Roof Assemblies

1.4 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Prior to erection of framing, conduct preinstallation meeting at site attended by Owner, Architect, manufacturer's technical representative, inspection agency and related trade contractors.

1. Coordinate building framing in relation to metal panel system.

1.5 QUALITY ASSURANCE

A. Manufacturer/Source: Provide metal roof panel assembly and accessories from a single manufacturer providing fixed-base roll forming, and accredited under IAS AC 472 Part B.

B. Manufacturer Qualifications: Approved manufacturer listed in this Section with minimum five years experience in manufacture of similar products in successful use in similar applications.

1. Approval of Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:

- a. Product data, including certified independent test data indicating compliance with requirements.
- b. Samples of each component.
- c. Sample submittal from similar project.
- d. Project references: Minimum of five installations not less than five years old, with Owner and Architect contact information.
- e. Sample warranty.
- f. IAS AC 472 certificate.

2. Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements.

3. Approved manufacturers must meet separate requirements of Submittals Article.

C. Installer Qualifications: Experienced Installer with minimum of five years experience with successfully completed projects of a similar nature and scope.

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1. Installer's Field Supervisor: Experienced mechanic, able to communicate with Owner, Architect, and installers, supervising work on site whenever work is underway.

1.6 ACTION SUBMITTALS

- A. Product Data: Manufacturer's data sheets for specified products.
- B. Shop Drawings: Show layouts of metal panels. Include details of each condition of installation, panel profiles, and attachment to building. Provide details at a minimum scale 1-1/2-inch per foot of edge conditions, joints, fastener and sealant placement, flashings, openings, penetrations, roof accessories, lightning arresting equipment, and special details. Make distinctions between factory and field assembled work.
 1. Indicate points of supporting structure that must coordinate with metal panel system installation.
 2. Include data indicating compliance with performance requirements.
 3. Include structural data indicating compliance with requirements of authorities having jurisdiction.
- C. Samples for Initial Selection: For each exposed product specified including sealants. Provide representative color charts of manufacturer's full range of colors.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Information: For Installer firm and Installer's field supervisor.
- B. Manufacturer's Warranty: Sample copy of manufacturer's standard warranty, including special Coastal Finish warranty.

1.8 CLOSEOUT SUBMITTALS

- A. Maintenance data.
- B. Manufacturer's Warranty: Executed copy of manufacturer's standard warranty.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Protect products of metal panel system during shipping, handling, and storage to prevent staining, denting, deterioration of components or other damage. Protect panels and trim bundles during shipping.
 1. Deliver, unload, store, and erect metal panel system and accessory items without misshaping panels or exposing panels to surface damage from weather or construction operations.
 2. Store in accordance with Manufacturer's written instructions. Provide wood collars for stacking and handling in the field.

1.10 COORDINATION

- A. Coordinate sizes, profiles, and locations of roof curbs and other roof-mounted equipment and roof penetrations, based upon sizes of actual selected equipment.

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1.11 WARRANTY

- A. Special Manufacturer's Warranty: On manufacturer's standard form, in which manufacturer agrees to repair or replace metal panel assemblies that fail within one year from date of Substantial Completion.
- B. Special "Coastal" Panel Finish Warranty: On Manufacturer's "Signature 300" system, in which Manufacturer agrees to repair or replace metal panels that evidence deterioration of factory-applied finish within 25 years from date of Substantial Completion, including:
 - 1. Fluoropolymer Three-Coat System:
 - a. Color fading in excess of 5 Hunter units per ASTM D 2244.
 - b. Chalking in excess of No. 8 rating per ASTM D 4214.
 - c. Failure of adhesion, peeling, checking, or cracking.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Basis of Design Manufacturer: MBCI Metal Roof and Wall Systems, Division of NCI Group, Inc.; Houston TX. Tel: (877)713-6224; Email: info@mbc.com; Web: www.mbc.com.
 - 1. Provide basis of design product, or comparable product approved by Architect prior to bid.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Provide metal roof panel system meeting performance requirements as determined by application of specified tests by a qualified testing facility on manufacturer's standard assemblies.
- B. Thermal Movements: Allow for thermal movements from variations in both ambient and internal temperatures. Accommodate movement of support structure caused by thermal expansion and contraction. Allow for deflection and design for thermal stresses caused by temperature differences from one side of the panel to the other.
- C. Structural Performance: Provide metal panel assemblies capable of withstanding the effects of indicated loads and stresses within limits and under conditions indicated:
 - 1. Wind Loads: Determine loads based on uniform pressure, importance factor, exposure category, and basic wind speed indicated on drawings.
 - 2. Snow Loads: As indicated.
 - 3. Deflection Limits: Withstand inward and outward wind-load design pressures in accordance with applicable building code with maximum deflection of 1/180 of the span with no evidence of failure.
 - 4. Seismic Performance: Comply with ASCE 7-16, and all relevant seismic chapters.

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- D. Wind Uplift Resistance: Comply with UL 580 for wind-uplift class UL-90.
- E. Water Penetration: ASTM E 1646: No uncontrolled water penetration at a static pressure of 20 lbf/sq. ft. (958 Pa).

2.3 METAL PANEL MATERIALS

- A. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, structural quality, Grade 50, Coating Class AZ50 (Grade 340, Coating Class AZM150), prepainted by the coil-coating process per ASTM A 755/A 755M.

2.4 METAL ROOF PANELS

- A. Large Tapered-Rib-Profile, Exposed Fastener Metal Roof Panels: Structural metal roof panel consisting of formed metal sheet with trapezoidal major ribs with intermediate stiffening ribs symmetrically placed between major ribs, installed by lapping edges of adjacent panels.

1. Basis of Design: MBCI, PBR Panel, www.mbc.com/pbr.html.
2. Coverage Width: 36 inches (914 mm).
3. Major Rib Spacing: 12 inches (305 mm) on center.
4. Rib Height: 1-1/4 inch (31.8 mm).
5. Nominal Coated Thickness: Manufacturer standard.
6. Panel Surface: Smooth.
7. Exterior Finish: Fluoropolymer three-coat "Signature 300" system.
8. Color: Evergreen.

2.5 METAL ROOF PANEL ACCESSORIES

- A. General: Provide complete metal roof panel assembly incorporating ridge, eave, rake, valley, and parapet trims, copings, fascias, gutters and downspouts, and miscellaneous flashings, in [manufacturer's standard profiles] [profiles as indicated]. Provide required fasteners, closure strips, support plates, and sealants as indicated in manufacturer's written instructions.
- B. Flashing and Trim: Match material, thickness, and finish of metal panel face sheet.
- C. Panel Fasteners: Self-tapping screws and other acceptable fasteners recommended by roof panel manufacturer.
 1. Exposed Fasteners: Long life fasteners with EPDM or neoprene gaskets, with heads matching color of metal panels by means of factory-applied coating.
- D. Joint Sealers: Manufacturer's standard or recommended liquid and preformed sealers and tapes, and as follows:
 1. Tape Sealers: Manufacturer's standard non-curing butyl tape, AAMA 809.2.
 2. Concealed Joint Sealants: Non-curing butyl, AAMA 809.2.
 3. Exposed Joint Sealants: Urethane, single component, ASTM C 920.

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- E. Steel Sheet Miscellaneous Framing Components: ASTM C 645, with ASTM A 653/A 653M, G60 (Z180) hot-dip galvanized zinc coating.

2.6 FABRICATION

- A. General: Provide factory fabricated and finished metal panels and accessories meeting performance requirements, indicated profiles, and structural requirements.
- B. Panel Lengths: Form panels in continuous lengths for full length of detailed runs, except where otherwise indicated on approved shop drawings.
- C. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's written instructions, approved shop drawings, and project drawings. Form from materials matching metal panel substrate and finish.

2.7 FINISHES

- A. Finishes, General: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
- B. Fluoropolymer Three-Coat System: 0.2 – 0.3 mil primer with 0.7 - 0.8 mil 70 percent PVDF fluoropolymer color coat, AAMA 621.
 - 1. Basis of Design: MBCI, Signature 300.
- C. Interior Finish: 0.5 mil total dry film thickness consisting of primer coat and wash coat of manufacturer's standard light-colored acrylic or polyester backer finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine metal panel system substrate and supports with Installer present. Inspect for erection tolerances and other conditions that would adversely affect installation of metal panel installation.
 - 1. Inspect metal panel support substrate to determine if support components are installed as indicated on approved shop drawings. Confirm presence of acceptable supports at recommended spacing to match installation requirements of metal panels.
 - 2. Panel Support Tolerances: Confirm that panel supports are within tolerances acceptable to metal panel system manufacturer but not greater than the following:
 - a. 1/4 inch (6 mm) in 20 foot (6.1 m) in any direction.
 - b. 3/8 inch (9 mm) over any single roof plane.
- B. Correct out-of-tolerance work and other deficient conditions prior to proceeding with metal roof panel system installation.

3.2 PREPARATION

- A. Miscellaneous Supports: Install subframing, girts, furring, and other miscellaneous panel support members according to ASTM C 754 and manufacturer's written instructions.
- B. Flashings: Install flashings to cover exposed underlayment per Section 07 62 00 "Sheet Metal Flashing and Trim."

3.3 METAL PANEL INSTALLATION

- A. Exposed Fastener Metal Roof Panels: Install weathertight metal panel system in accordance with manufacturer's written instructions, approved shop drawings, and project drawings. Install metal roof panels in orientation, sizes, and locations indicated, free of waves, warps, buckles, fastening stresses, and distortions. Anchor panels and other components securely in place. Provide for thermal and structural movement.
- B. Panel Sealants: Install manufacturer's recommended tape sealant at panel sidelaps and endlaps.
- C. Panel Fastening: Attach panels to supports using screws, fasteners, and sealants recommended by manufacturer and indicated on approved shop drawings.
 - 1. Fasten metal panels to supports at each location indicated on approved shop drawings, with spacing and fasteners recommended by manufacturer.
 - 2. Provide weatherproof jacks for pipe and conduit penetrating metal panels of types recommended by manufacturer.
 - 3. Dissimilar Materials: Where elements of metal panel system will come into contact with dissimilar materials, treat faces and edges in contact with dissimilar materials as recommended by manufacturer.

3.4 ACCESSORY INSTALLATION

- A. General: Install metal panel trim, flashing, and accessories using recommended fasteners and joint sealers, with positive anchorage to building, and with weather tight mounting. Coordinate installation with flashings and other components.
 - 1. Install components required for a complete metal panel assembly, including trim, copings, flashings, sealants, closure strips, and similar items.
 - 2. Comply with details of assemblies utilized to establish compliance with performance requirements and manufacturer's written installation instructions.
 - 3. Set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently weather resistant.
- B. Joint Sealers: Install joint sealers where indicated and where required for weathertight performance of metal panel assemblies, in accordance with manufacturer's written instructions.
 - 1. Prepare joints and apply sealants per requirements of Division 07 Section "Joint Sealants."

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage an independent testing and inspecting agency acceptable to Architect to perform field tests and inspections and to prepare test reports.

3.6 CLEANING AND PROTECTION

- A. Remove temporary protective films immediately in accordance with metal roof panel manufacturer's instructions. Clean finished surfaces as recommended by metal roof panel manufacturer.
- B. Replace damaged panels and accessories that cannot be repaired to the satisfaction of the Architect.

END OF SECTION

SECTION 076200 - 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:
 - 1. Formed roof-drainage sheet metal fabrications.
 - 2. Formed wall sheet metal fabrications.
- B. Related Requirements:
 - 1. Section 061000 "Rough Carpentry" for wood nailers, curbs, and blocking.
 - 2. Section 042000 "Unit Masonry" for materials and installation of manufactured sheet metal through-wall flashing and trim integral with masonry.
 - 3. Section 074113 "Metal Roof Panels" for materials and installation of sheet metal flashing and trim integral with roofing.

1.3 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.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.
- B. Special warranty.

1.5 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.

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1. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
 2. Protect stored sheet metal flashing and trim from contact with water.
- 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.

1.6 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 Delta E units when tested in accordance with ASTM D2244.
 - b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, 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: Architectural Metal Flashing, Condensation and Air Leakage Control, and Reroofing" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. 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 (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 SHEET METALS

- A. Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
 - a. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions for seacoast and severe environments.
 - 2. Color: As selected by Architect from manufacturer's full range.
 - 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 (0.013 mm).
- B. Metallic-Coated Steel Sheet: Provide zinc-coated (galvanized) steel sheet in accordance with ASTM A653/A653M, G90 (Z275) coating designation prepainted by coil-coating process to comply with ASTM A755/A755M.
 - 1. Surface: Smooth.
 - 2. Exposed Coil-Coated Finish:
 - a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions for seacoast and severe environments.
 - 3. Color: As selected by Architect from manufacturer's full range.
 - 4. 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 (0.013 mm).
- C. Lead Sheet: ASTM B749 lead sheet.

2.3 UNDERLAYMENT MATERIALS

- A. Felt: ASTM D226/D226M, Type II (No. 30), asphalt-saturated organic felt; nonperforated.
 - 1. Source Limitations: Obtain underlayment from single source from single manufacturer.
- B. Self-Adhering, High-Temperature Sheet Underlayment: Minimum 30 mils (0.76 mm) thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer in accordance with underlayment manufacturer's written instructions.

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1. Manufacturers: Subject to compliance with requirements, provide Grace Ultra by W R Grace or prior approved equal.
2. Source Limitations: Obtain underlayment from single source from single manufacturer.
3. Low-Temperature Flexibility: ASTM D1970/D1970M; passes after testing at minus 20 deg F (29 deg C) or lower.

2.4 MISCELLANEOUS MATERIALS

- A. Provide materials and types of fasteners, 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 unless otherwise indicated.
- B. Fasteners: 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 primary sheet metal.
 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
 - a. Exposed Fasteners: Avoid any exposed fasteners. Consult with architect if any exposed fasteners required.
 - b. Blind Fasteners: High-strength aluminum or stainless steel rivets suitable for metal being fastened.
- C. 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 (13 mm) wide and 1/8 inch (3 mm) thick.
- D. Elastomeric Sealant: ASTM C920, elastomeric [polyurethane] [polysulfide] [silicone] polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- E. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- F. Bituminous Coating: Cold-applied asphalt emulsion in accordance with ASTM D1187/D1187M.

2.5 FABRICATION, GENERAL

- A. Custom fabricate sheet metal flashing and trim to comply with details indicated and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required.
 1. Fabricate sheet metal flashing and trim in shop to greatest extent possible.

2. 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.
3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate fit before shop fabrication.
4. 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.
5. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances:

1. Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

C. 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 (25 mm) deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal in accordance with cited sheet metal standard to provide for proper installation of elastomeric sealant.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard and by FM Global Property Loss Prevention Data Sheet 1-49 for application, but not less than thickness of metal being secured.

G. Seams:

1. Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
2. 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, but only where not exposed, or with prior approval by architect.

H. Do not use graphite pencils to mark metal surfaces.

2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Hanging Gutters:

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1. Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required.
 2. Fabricate in minimum 96-inch- (2400-mm-) long sections.
 3. Furnish flat-stock gutter brackets and flat-stock gutter spacers and straps fabricated from same metal as gutters, of size recommended by cited sheet metal standard, but with thickness not less than twice the gutter thickness.
 4. Fabricate expansion joints, expansion-joint covers, and gutter accessories from same metal as gutters. Shop fabricate interior and exterior corners.
 5. Gutter Profile: Style H in accordance with cited sheet metal standard.
 6. Expansion Joints: Butt type with cover plate.
 7. Accessories: Continuous, removable leaf screen with sheet metal frame and hardware cloth screen.
 8. Gutters with Girth up to 15 Inches (380 mm): Fabricate from the following materials:
 - a. Galvanized Steel: 0.022 inch (0.56 mm) thick or Aluminum-Zinc Alloy-Coated Steel: 0.022 inch (0.56 mm) thick.
- B. Downspouts: Fabricate rectangular downspouts to dimensions indicated on Drawings, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors. Shop fabricate elbows.
1. Hanger Style: U-bracket.
 2. Fabricate from the following materials:
 - a. Galvanized Steel: 0.022 inch (0.56 mm) thick or Aluminum-Zinc Alloy-Coated Steel: 0.022 inch (0.56 mm) thick.
 3. Size: See drawings.
- C. Splash Pans: Unless indicated to tie in to underground drainage provide concrete splash block at all downspouts.

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 (0.56 mm) thick or Aluminum-Zinc Alloy-Coated Steel: 0.022 inch (0.56 mm) thick.
- B. Drip Edges: Fabricate from the following materials:
1. Galvanized Steel: 0.022 inch (0.56 mm) thick or Aluminum-Zinc Alloy-Coated Steel: 0.022 inch (0.56 mm) thick.
- C. Eave, Rake[, Ridge, and Hip] Flashing: Fabricate from the following materials:
1. Galvanized Steel: 0.022 inch (0.56 mm) thick or Aluminum-Zinc Alloy-Coated Steel: 0.022 inch (0.56 mm) thick.
- D. Counterflashing: [Shop fabricate interior and exterior corners.] Fabricate from the following materials:
1. Galvanized Steel: 0.022 inch (0.56 mm) thick or Aluminum-Zinc Alloy-Coated Steel: 0.022 inch (0.56 mm) thick.
- E. Flashing Receivers: Fabricate from the following materials:

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1. Galvanized Steel: 0.022 inch (0.56 mm) thick or Aluminum-Zinc Alloy-Coated Steel: 0.022 inch (0.56 mm) thick.
- F. Roof-Penetration Flashing: Fabricate from the following materials:
1. Galvanized Steel: 0.028 inch (0.71 mm) thick or Aluminum-Zinc Alloy-Coated Steel: 0.028 inch (0.71 mm) 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.

3.2 INSTALLATION, GENERAL

- A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.
1. Install fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
 2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of sealant.
 3. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement.
 4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
 5. Install continuous cleats with fasteners spaced not more than 12 inches (300 mm) o.c.
 6. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
 7. Do not field cut sheet metal flashing and trim by torch.
 8. Do not use graphite pencils to mark metal surfaces.
- B. 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. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.

1. Space movement joints at maximum of 10 feet (3 m) with no joints within 24 inches (600 mm) of corner or intersection.
2. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.
3. Use lapped expansion joints only where indicated on Drawings.

D. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

E. 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.

F. Seal joints as required for watertight construction.

1. Use sealant-filled joints unless otherwise indicated.
 - a. Embed hooked flanges of joint members not less than 1 inch (25 mm) into sealant.
 - b. Form joints to completely conceal sealant.
 - c. When ambient temperature at time of installation is between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way.
 - d. Adjust setting proportionately for installation at higher ambient temperatures.
 - 1) Do not install sealant-type joints at temperatures below 40 deg F (4 deg C).
2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

3.3 INSTALLATION OF ROOF-DRAINAGE SYSTEM

A. Install sheet metal roof-drainage items to produce complete roof-drainage system in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.

B. Hanging Gutters:

1. Join sections with joints sealed with sealant.
2. Provide for thermal expansion.
3. Attach gutters at eave or fascia to firmly anchor them in position.

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4. Provide end closures and seal watertight with sealant.
5. Slope to downspouts.
6. Anchor and loosely lock back edge of gutter to continuous cleat.

Generally, retain only one of first two subparagraphs below; revise to suit Project.

7. Anchor gutter with straps spaced not more than 36 inches (910 mm) apart to roof deck unless otherwise indicated, and loosely lock to front gutter bead.
8. Install gutter with expansion joints at locations indicated on Drawings, but not exceeding, 50 feet (15.2 m) > apart. Install expansion-joint caps.
9. Install continuous gutter screens on gutters with noncorrosive fasteners, hinged to swing open for cleaning gutters.

C. Downspouts:

1. Join sections with 1-1/2-inch (38-mm) telescoping joints.
2. Provide hangers with fasteners designed to hold downspouts securely to walls.
3. Locate hangers at top and bottom and at approximately 60 inches (1500 mm) o.c.
4. Provide elbows at base of downspout to direct water away from building.
5. Where indicated at Equipment Yard Closure, connect downspouts to underground drainage system.

D. Precast Concrete Splash Pans:

1. Install where downspouts discharge on grade.

3.4 INSTALLATION OF ROOF FLASHINGS

- A. Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard.
 1. Provide concealed fasteners where possible, and set units true to line, levels, and slopes.
 2. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

3.5 INSTALLATION OF WALL FLASHINGS

- A. Install sheet metal wall flashing to intercept and exclude penetrating moisture in accordance with 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, and similar flashings to extend 4 inches (100 mm) beyond wall openings.
- C. Reglets: Installation of reglets is specified in Section 042000 "Unit Masonry".

3.6 INSTALLATION TOLERANCES

- A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.7 CLEANING

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean off excess sealants.

3.8 PROTECTION

- A. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended in writing by sheet metal flashing and trim manufacturer.
- C. Maintain sheet metal flashing and trim in clean condition during construction.
- D. 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, as determined by Architect.

END OF SECTION 076200

SECTION 079200 - 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. Nonstaining silicone joint sealants.
 - 2. Mildew-resistant joint sealants.
 - 3. Butyl joint sealants.
 - 4. Latex joint sealants.

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- (13-mm-) wide joints formed between two 6-inch- (150-mm-) 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 testing agency.
- B. Product Test Reports: For each kind of joint sealant, for tests performed by manufacturer and witnessed by a qualified testing agency.
- C. Field-Adhesion-Test Reports: For each sealant application tested.

- D. Sample Warranties: For special warranties.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.
- B. Product Testing: Test joint sealants using a qualified testing agency.
 - 1. Testing Agency Qualifications: Qualified according to ASTM C1021 to conduct the testing indicated.

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 (5 deg C).
 - 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: Two 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. Warranty Period: Five years from date of Substantial Completion.
- 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. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 NONSTAINING SILICONE JOINT SEALANTS

- A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C1248.
- 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 C920, Type S, Grade NS, Class 50, Use NT.
 - 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. GE Construction Sealants; Momentive Performance Materials Inc.
 - b. Pecora Corporation.
 - c. Sika Corporation; Joint Sealants.
 - d. The Dow Chemical Company.
 - e. Tremco Incorporated.

2.3 MILDEW-RESISTANT JOINT SEALANTS

- A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.
- 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 C920, Type S, Grade NS, Class 25, Use NT.
 - 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. GE Construction Sealants; Momentive Performance Materials Inc.
 - b. Pecora Corporation.
 - c. The Dow Chemical Company.
 - d. Tremco Incorporated.

2.4 BUTYL JOINT SEALANTS

A. Butyl-Rubber-Based Joint Sealants: ASTM C1311.

1. Basis of Design: Pecora Corporation.

2.5 LATEX JOINT SEALANTS

A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.

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. May National Associates, Inc.; a subsidiary of Sika Corporation.
 - b. Pecora Corporation.
 - c. Sherwin-Williams Company (The).
 - d. Tremco Incorporated.

2.6 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 C1330, Type C (closed-cell material with a surface skin), Type O (open-cell material), Type B (bicellular material with a surface skin), or any of the preceding types, 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.
- 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.

2.7 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.
- 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.
 - 3. Remove laitance and form-release agents from concrete.
- 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 C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. 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.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. 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.
- F. 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 C1193 unless otherwise indicated.

3.4 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
 - 1. Extent of Testing: Test completed and cured sealant joints as follows:
 - a. Perform 5 tests for the first 500 feet of joint length for each kind of sealant and joint substrate.
 - 2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C1193 or Method A, Tail Procedure, in ASTM C1521.
 - a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

3. Inspect tested joints and report on the following:
 - a. Whether sealants filled joint cavities and are free of voids.
 - b. Whether sealant dimensions and configurations comply with specified requirements.
 - c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.
 4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.
 5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
- B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 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.

3.6 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.

END OF SECTION 079200

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

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. Exterior standard steel doors and frames.
- B. Related Requirements:
 - 1. Section 087100 "Door Hardware" for door hardware for hollow-metal doors.

1.3 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or ANSI/SDI A250.8.

1.4 COORDINATION

- A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.
- B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, core descriptions, fire-resistance ratings and finishes.
- B. Shop Drawings: Include the following:
 - 1. Elevations of each door type.
 - 2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.

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3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
7. Details of anchorages, joints, field splices, and connections.
8. Details of accessories.
9. Details of moldings, removable stops, and glazing.

- C. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.6 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each type of fire-rated hollow-metal door and frame assembly, windborne-debris impact resistance door, and thermally rated door assemblies for tests performed by a qualified testing agency indicating compliance with performance requirements.
- B. Field quality control reports.

1.7 CLOSEOUT SUBMITTALS

- A. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
1. Provide additional protection to prevent damage to factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch- (102-mm-) high wood blocking. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.

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. Ceco Décor; Assa Abloy.
 2. Curries Company; Assa Abloy.
 3. Mesker Door Inc.
 4. Republic Doors and Frames.
 5. Steelcraft; an Allegion brand.

2.2 PERFORMANCE REQUIREMENTS

- A. Windborne-Debris Impact Resistance: Passes ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for Wind Zone 3 for enhanced protection.
1. Large-Missile Test: For glazed openings located within 30 feet (9.1 m).
- B. Thermally Rated Door Assemblies: Provide door assemblies with U-factor of not more than 0.50 deg Btu/F x h x sq. ft. (2.84 W/K x sq. m) when tested according to ASTM C518.

2.3 EXTERIOR STANDARD STEEL DOORS AND FRAMES

- A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Extra-Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 3; ANSI/SDI A250.4, Level A.
1. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches (44.5 mm).
 - c. Face: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm), with minimum A60 (ZF180) coating.
 - d. Edge Construction: Model 1, Full Flush.
 - e. Edge Bevel: Bevel lock and hinge edges 1/8 inch in 2 inches (3.2 mm in 51 mm).
 - f. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.

- g. Bottom Edges: Close bottom edges of doors with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
 - h. Core: Polyurethane.
2. Frames:
- a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm), with minimum A60 (ZF180) coating.
 - b. Construction: Full profile welded.
3. Exposed Finish: Prime.

2.4 FRAME ANCHORS

A. Jamb Anchors:

- 1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
- 2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches (610 mm) of frame height above 7 feet (2.1 m).

B. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.

- 1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized according to ASTM A153/A153M, Class B.

2.5 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.
- D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A153/A153M.
- E. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- F. Mineral-Fiber Insulation: ASTM C665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E136 for combustion characteristics.

2.6 FABRICATION

- A. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.
 - 1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 2. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
- B. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to ANSI/SDI A250.6, the Door Hardware Schedule, and templates.
 - 1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
 - 2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

2.7 STEEL FINISHES

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
 - 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.
- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.2 INSTALLATION

- A. Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.
- B. Hollow-Metal Frames: Comply with ANSI/SDI A250.11.
 - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.
 - a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
 - b. Install frames with removable stops located on secure side of opening.
 - 2. Solidly pack mineral-fiber insulation inside frames.
 - 3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout or mortar.
 - 4. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.
- C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.
 - 1. Non-Fire-Rated Steel Doors: Comply with ANSI/SDI A250.8.

3.3 FIELD QUALITY CONTROL

- A. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to Architect.
- B. Inspections:
 - 1. Egress Door Inspections: Inspect each door equipped with panic hardware, each door equipped with fire exit hardware, each door located in an exit enclosure, each electrically controlled egress door, and each door equipped with special locking arrangements according to NFPA 101, Section 7.2.1.15.
- C. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

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- D. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.
- E. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80 and NFPA 101.

3.4 REPAIR

- A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- B. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.
- C. Factory-Finish Touchup: Clean abraded areas and repair with same material used for factory finish according to manufacturer's written instructions.
- D. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION 081113

SECTION 087100 - DOOR HARDWARE

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 commercial door hardware for the following:
 - 1. Swinging doors.
- B. Door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Division 08 Section "Hollow Metal Doors and Frames".
 - 2. Division 08 Section "Flush Wood Doors".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 70 - National Electrical Code.
 - 4. NFPA 80 - Fire Doors and Windows.
 - 5. NFPA 101 - Life Safety Code.
 - 6. NFPA 105 - Installation of Smoke Door Assemblies.
 - 7. State Building Codes, Local Amendments.
- E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:
 - 1. ANSI/BHMA Certified Product Standards - A156 Series.
 - 2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
 - 3. ANSI/UL 294 - Access Control System Units.
 - 4. UL 305 - Panic Hardware.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 - 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - h. Warranty information for each product.
 - 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- D. Informational Submittals:

1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

E. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

1.4 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware 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.

D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.

2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

F. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

I. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties 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. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
 - 1. Five years for standard duty cylindrical (bored) locks and latches.
 - 2. Five years for exit hardware.
 - 3. Two years for electromechanical door hardware, unless noted otherwise.

1.8 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
- B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
 - 1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.
 - 1. Quantity: Provide the following hinge quantity:
 - a. Two Hinges: For doors with heights up to 60 inches.
 - b. Three Hinges: For doors with heights 61 to 90 inches.
 - c. Four Hinges: For doors with heights 91 to 120 inches.
 - d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
 - 2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
 - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
 - b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
 - 3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.

- b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
- 4. Hinge Options: Comply with the following:
 - a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
- 5. Manufacturers:
 - a. Hager Companies (HA).
 - b. McKinney (MK).
 - c. Stanley Hardware (ST).

2.3 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.
 - 1. Manufacturers:
 - a. Corbin Russwin (RU).
 - b. Schlage (SC).
 - c. Yale Commercial (YA).
- C. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:
 - 1. Threaded mortise cylinders with rings and cams to suit hardware application.
 - 2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 - 3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.
 - 4. Tubular deadlocks and other auxiliary locks.
 - 5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
 - 6. Keyway: Manufacturer's Standard.
- D. Interchangeable Cores: Provide small format interchangeable cores as specified, core insert, removable by use of a special key; usable with other manufacturers' cylinders.
- E. Keying System: Each type of lock and cylinders to be factory keyed.

1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
3. Existing System: Field verify and key cylinders to match Owner's existing system.

F. Key Quantity: Provide the following minimum number of keys:

1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): Five (5).
3. Construction Keys (where required): Ten (10).
4. Construction Control Keys (where required): Two (2).
5. Permanent Control Keys (where required): Two (2).

G. Construction Keying: Provide temporary keyed construction cores.

H. Key Registration List (Bitting List):

1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

2.4 MECHANICAL LOCKS AND LATCHING DEVICES

A. Cylindrical Locksets, Grade 1 (Commercial Duty): ANSI/BHMA A156.2, Series 4000, Operational Grade 1 Certified Products Directory (CPD) listed.

1. Locks are to be non-handed and fully field reversible.
2. Manufacturers:
 - a. Corbin Russwin (RU) - CLX3300 Series.
 - b. Schlage (SC) - ND Series.
 - c. Yale Commercial(YA) 4700LN Series.

2.5 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.6 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.

1. Manufacturers:

- a. Corbin Russwin (RU) - DC6000 Series.
- b. Norton Rixson (NO) - 7500 Series.
- c. Yale Commercial(YA) - 4400 Series.

2.7 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
 - a. Stainless Steel: 300 grade, 050-inch thick.
5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Manufacturers:
 - a. Hiawatha, Inc. (HI).
 - b. Rockwood (RO).
 - c. Trimco (TC).

2.8 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
 1. Manufacturers:
 - a. Hiawatha, Inc. (HI).
 - b. Rockwood (RO).
 - c. Trimco (TC).

2.9 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
 - 1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
 - 1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.
- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Manufacturers:
 - 1. National Guard Products (NG).
 - 2. Pemko (PE).
 - 3. Reese Enterprises, Inc. (RE).

2.10 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.11 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
 - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
 - 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 - 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.5 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.6 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.7 DOOR HARDWARE SETS

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted

items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

1. Quantities listed are for each pair of doors, or for each single door.
2. The supplier is responsible for handing and sizing all products.
3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.

B. Manufacturer's Abbreviations:

1. MK - McKinney
2. RU – Corbin Russwin
3. RO - Rockwood
4. NO - Norton
5. PE - Pemko

Hardware Sets

Set: 1.0

Doors: 103, 104

Description: Storeroom Function

3 Hinge, Full Mortise	TA2314 NRP	US26D	MK
1 Storeroom Lock	CLX3357 NZD	626	RU
1 Permanent Core	Match Owner's Keyway	626	RU
1 Surface Closer	7500 SN-134	689	NO
1 Kick Plate	K1050 10" High	US32D	RO
1 Wall Stop	409	US32D	RO
1 Gasketing	S88BL x L A R		PE

END OF SECTION 087100

SECTION 092400 - CEMENT PLASTERING

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. Exterior vertical plasterwork (stucco).

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Show locations and installation of control and expansion joints, including plans, elevations, sections, details of components, and attachments to other work.
- C. Samples: For each type of factory-prepared finish coat and for each color and texture specified.
- D. Samples for Initial Selection: For each type of factory-prepared finish coat and for each color and texture specified.
- E. Samples for Verification: For each type of factory-prepared finish coat and for each color and texture specified, 12 by 12 inches (305 by 305 mm), and prepared on rigid backing.

1.4 QUALITY ASSURANCE

- A. 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 each substrate and finish texture indicated for cement plastering, including accessories. Mockup for plaster can be on initial section of CMU wall construction, not on mockup panel.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

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3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials inside under cover, and keep them dry and protected against damage from weather, moisture, direct sunlight, surface contamination, corrosion, construction traffic, and other causes.

1.6 FIELD CONDITIONS

- A. Comply with ASTM C926 requirements.
- B. Exterior Plasterwork:
 1. Apply and cure plaster to prevent plaster drying out during curing period. Use procedures required by climatic conditions, including moist curing, providing coverings, and providing barriers to deflect sunlight and wind.
 2. Apply plaster when ambient temperature is greater than 40 deg F (4.4 deg C).
 3. Protect plaster coats from freezing for not less than 48 hours after set of plaster coat has occurred.
- C. Factory-Prepared Finishes: Comply with manufacturer's written recommendations for environmental conditions for applying finishes.

PART 2 - PRODUCTS

2.1 METAL LATH

- A. Expanded-Metal Lath: ASTM C847, cold-rolled carbon-steel sheet with ASTM A653/A653M, G60 (Z180), hot-dip galvanized-zinc coating.
 1. Diamond-Mesh Lath: Self-furring, 2.5 lb/sq. yd. (1.4 kg/sq. m).

2.2 ACCESSORIES

- A. General: Comply with ASTM C1063, and coordinate depth of trim and accessories with thicknesses and number of plaster coats required.
- B. Plastic Accessories: Manufactured from high-impact PVC.
 1. Cornerbeads: With perforated flanges.
 - a. Smallnose cornerbead; use unless otherwise indicated.
 2. Casing Beads: With perforated flanges in depth required to suit plaster bases indicated and flange length required to suit applications indicated.
 - a. Square-edge style; use unless otherwise indicated.

3. Control Joints: One-piece-type, folded pair of unperforated screeds in M-shaped configuration; with perforated flanges and removable protective tape on plaster face of control joint.
4. Expansion Joints: Two-piece type, formed to produce slip-joint and square-edged 1/2-inch- (13-mm-) wide reveal; with perforated concealed flanges.

2.3 MISCELLANEOUS MATERIALS

- A. Water for Mixing and Finishing Plaster: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.
- B. Fiber for Base Coat: Alkaline-resistant glass or polypropylene fibers, 1/2 inch (13 mm) long, free of contaminants, manufactured for use in cement plaster.
- C. Fasteners for Attaching Metal Lath to Substrates: ASTM C1063.
- D. Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, not less than 0.0475-inch (1.21-mm) diameter unless otherwise indicated.

2.4 PLASTER MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I.
- B. Lime: ASTM C206, Type S; or ASTM C207, Type S.
- C. Sand Aggregate: ASTM C897.
- D. Ready-Mixed Finish-Coat Plaster: Mill-mixed portland cement, aggregates, coloring agents, and proprietary ingredients.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Bonsal American, an Oldcastle Company; Marblesil Stucco Mix.
 - b. California Stucco Products Corp.; Conventional Portland Cement Stucco.
 - c. El Rey Stucco Company, Inc., a brand of ParaexLaHabra, Inc.; Premium Stucco Finish.
 - d. Florida Stucco; Florida Stucco.
 - e. LaHabra, a brand of ParexLaHabra, Inc.; Exterior Stucco Color Coat.
 - f. Omega Products International, Inc.; ColorTek Exterior Stucco.
 - g. QUIKCRETE; QUIKCRETE Finish Coat Stucco, No. 1201.
 - h. Shamrock Stucco LLC; Exterior Stucco.
 - i. SonoWall BASF Wall Systems, Inc.; Thoro Stucco.
 - j. USG Corporation; Oriental Exterior Finish Stucco.
 2. Color: As selected by Architect from manufacturer's full range.

2.5 PLASTER MIXES

- A. General: Comply with ASTM C926 for applications indicated.

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1. Fiber Content: Add fiber to base-coat mixes after ingredients have mixed at least two minutes. Comply with fiber manufacturer's written instructions for fiber quantities in mixes, but do not exceed 1 lb of fiber/cu. yd. (0.6 kg of fiber/cu. m) of cementitious materials.
- B. Base-Coat Mixes for Use over Metal Lath: Scratch and brown coats for three-coat plasterwork as follows:
 1. Portland Cement Mixes:
 - a. Scratch Coat: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 2-1/2 to 4 parts aggregate per part of cementitious material.
 - b. Brown Coat: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 3 to 5 parts aggregate per part of cementitious material, but not less than volume of aggregate used in scratch coat.
- C. Factory-Prepared Finish-Coat Mixes: For ready-mixed finish-coat plasters, comply with manufacturer's written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates 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 PREPARATION

- A. Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.
- B. Prepare smooth, solid substrates for plaster according to ASTM C926.

3.3 INSTALLING METAL LATH

- A. Metal Lath: Install according to ASTM C1063.
 1. On Solid Surfaces, Not Otherwise Furred: Install self-furring, diamond-mesh lath.

3.4 INSTALLING ACCESSORIES

- A. Install according to ASTM C1063 and at locations indicated on Drawings.
- B. Reinforcement for External (Outside) Corners:

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1. Install lath-type, external-corner reinforcement at exterior locations.

C. Control Joints: Locate as approved by Architect for visual effect and as follows:

1. As required to delineate plasterwork into areas (panels) of the following maximum sizes:
 - a. Vertical Surfaces: 144 sq. ft. (13.4 sq. m).
2. At distances between control joints of not greater than 18 feet (5.5 m) o.c.

3.5 PLASTER APPLICATION

A. General: Comply with ASTM C926.

1. Do not deviate more than plus or minus 1/4 inch in 10 feet (6 mm in 3 m) from a true plane in finished plaster surfaces when measured by a 10-foot (3-m) straightedge placed on surface.
2. Finish plaster flush with metal frames and other built-in metal items or accessories that act as a plaster ground unless otherwise indicated. Where casing bead does not terminate plaster at metal frame, cut base coat free from metal frame before plaster sets and groove finish coat at junctures with metal.
3. Provide plaster surfaces that are ready to receive field-applied finishes indicated.

B. Bonding Compound: Apply on unit masonry substrates for direct application of plaster.

C. Walls; Base-Coat Mixes for Use over Metal Lath: For scratch and brown coats, for three-coat plasterwork with 3/4-inch (19-mm) total thickness, as follows:

1. Portland cement mixes.

D. Plaster Finish Coats: Apply to provide float finish to match Architect's sample.

3.6 PLASTER REPAIRS

- A. Repair or replace work to eliminate cracks, dents, blisters, buckles, crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

3.7 CLEANING AND PROTECTION

- A. Remove temporary protection and enclosure of other work after plastering is complete. Promptly remove plaster from door frames, windows, and other surfaces not indicated to be plastered. Repair floors, walls, and other surfaces stained, marred, or otherwise damaged during plastering.

END OF SECTION 092400

SECTION 099113 - EXTERIOR PAINTING

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 surface preparation and the application of paint systems on the following exterior substrates:
 - 1. Concrete masonry units (CMUs)/stucco.
 - 2. Steel and iron.
- B. Related Requirements:
 - 1. Section 051200 "Structural Steel Framing" for shop priming of metal substrates.
 - 2. Section 055000 "Metal Fabrications" for shop priming metal fabrications.

1.3 DEFINITIONS

- A. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D523.
- B. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D523.
- C. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D523.
- D. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D523.
- E. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D523.
- F. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D523.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
 - 1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.

2. Indicate VOC content.
- B. Samples for Initial Selection: For each type of topcoat product.
- C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.
 1. Submit Samples on rigid backing, 8 inches (200 mm) square.
 2. Apply coats on Samples in steps to show each coat required for system.
 3. Label each coat of each Sample.
 4. Label each Sample for location and application area.
- D. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

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. Paint: 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

1.6 QUALITY ASSURANCE

- A. Mockups: In addition to building mock-up panel, apply mockups of each paint 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 for application of each paint system.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
 - 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.

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1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.8 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

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. Behr Paint Company: Behr Process Corporation.
 - 2. Benjamin Moore & Co.
 - 3. PPG Paints.
 - 4. Sherwin-Williams Company (The).

2.2 PAINT, GENERAL

- A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."
- B. Material Compatibility:
 - 1. Materials for use within each paint system shall be 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, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

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:
 - 1. Masonry (Clay and CMUs): 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- D. 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 Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. 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 painting 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, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:
 - 1. SSPC-SP 3.
- E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

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- F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- G. Aluminum Substrates: Remove loose surface oxidation.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
 - 3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
 - 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 - 5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. 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 paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

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 paint for dry film thickness.
 - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
 - 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint 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.

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- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

A. Steel and Iron Substrates:

- 1. Water-Based Light Industrial Coating System MPI EXT 5.1M:
 - a. Prime Coat: Primer, rust inhibitive, water based MPI #107.
 - b. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.
 - c. Topcoat: Light industrial coating, exterior, water based, semi-gloss (MPI Gloss Level 5), MPI #163.

B. Galvanized-Metal Substrates:

- 1. Water-Based Light Industrial Coating System MPI EXT 5.3K:
 - a. Prime Coat: Primer, epoxy, anti-corrosive, MPI #101.
 - b. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.
 - c. Topcoat: Light industrial coating, exterior, water based, semi-gloss (MPI Gloss Level 5), MPI #163.

END OF SECTION 099113

SECTION 099123 - INTERIOR PAINTING

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. Primers.
2. Water-based finish coatings.
3. Floor sealers and paints.

B. Related Requirements:

1. Section 051200 "Structural Steel Framing" for shop priming structural steel.
2. Section 055000 "Metal Fabrications" for shop priming metal fabrications.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Include preparation requirements and application instructions.
2. Indicate VOC content.

- B. Samples: For each type of topcoat product.

- C. Samples for Initial Selection: For each type of topcoat product.

- D. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches (200 mm) square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

- E. Product Schedule: Use same designations indicated on Drawings and in the Interior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

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1.4 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. Paint Products: 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

1.5 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each paint 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 for application of each paint system.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
 - 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.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.7 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures of less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

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. Behr Paint Company; Behr Process Corporation.
 2. Benjamin Moore & Co.
 3. PPG Paints.
 4. Sherwin-Williams Company (The).
- B. Source Limitations: Obtain each paint product from single source from single manufacturer.

2.2 PAINT PRODUCTS, GENERAL

- A. Material Compatibility:
1. Materials for use within each paint system shall be 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, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

2.3 PRIMERS

- A. Interior/Exterior Latex Block Filler: Water-based, high-solids, emulsion coating formulated to bridge and fill porous surfaces of exterior concrete masonry units in preparation for specified subsequent coatings.
- B. Interior, Institutional Low-Odor/VOC Primer Sealer: Water-based primer sealer with low-odor characteristics and a VOC of less than 10 grams per liter for use on new interior gypsum wallboard surfaces that are subsequently to be painted with latex finish coats.

2.4 WATER-BASED FINISH COATS

- A. Interior, Latex, Eggshell: Pigmented, water-based paint for use on primed/sealed interior gypsum board:
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. Behr Paint Company; Behr Process Corporation.
 - b. Benjamin Moore & Co.

- c. PPG Paints.
 - d. Pratt & Lambert.
 - e. Rust-Oleum Corporation; a subsidiary of RPM International, Inc.
 - f. Sherwin-Williams Company (The).
2. Gloss and Sheen Level: Gloss of 10 to 25 units at 60 degrees and sheen of 10 to 35 units at 85 degrees when tested in accordance with ASTM D523.
- B. Interior, Water-Based Light-Industrial Coating, Semigloss: Pigmented, water-based emulsion coating for interior primed metal surfaces (e.g., frames), providing resistance to moderate abrasion and mild chemical exposure and corrosive conditions.
1. Gloss Level: Gloss of 35 to 70 units at 60 degrees when tested in accordance with ASTM D523.

2.5 FLOOR SEALERS AND PAINTS

- A. Water-Based Concrete Floor Sealer: Clear, water-based, acrylic-copolymer-emulsion sealer formulated for oil, gasoline, alkali, and water resistance and for use on concrete traffic surfaces.
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. Behr Paint Company; Behr Process Corporation.
 - b. H&C® Decorative Concrete Products; a brand of Sherwin-Williams Co.
 - c. PPG Paints.
 - d. Rust-Oleum Corporation; a subsidiary of RPM International, Inc.
 - e. Sherwin-Williams Company (The).

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:
1. Concrete: 12 percent.
 2. Masonry (Clay and CMUs): 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- D. 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 applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. 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 painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Concrete Substrates: 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.
- E. Masonry Substrates: 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.
- F. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:
 1. SSPC-SP 3.
- G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- I. Aluminum Substrates: Remove loose surface oxidation.

3.3 INSTALLATION

- A. Apply paints according to manufacturer's written instructions.
 1. Use applicators and techniques suited for paint and substrate indicated.

2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 5. 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 paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Painting, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
1. Paint the following work where exposed in equipment rooms:
 - a. Equipment, including panelboards.
 - b. Uninsulated metal piping.
 - c. Uninsulated plastic piping.
 - d. Pipe hangers and supports.
 - e. Metal conduit.
 - f. Plastic conduit.
 - g. Tanks that do not have factory-applied final finishes.
 - h. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
 2. Paint the following work where exposed in occupied spaces:
 - a. Equipment, including panelboards.
 - b. Uninsulated metal piping.
 - c. Uninsulated plastic piping.
 - d. Pipe hangers and supports.
 - e. Metal conduit.
 - f. Plastic conduit.
 - g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
 - h. Other items as directed by Architect.
 3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

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 paint for dry-film thickness.
 - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
 - 2. If test results show that dry-film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry-film thickness that complies with paint 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.
 - 1. Do not clean equipment with free-draining water and prevent solvents, thinners, cleaners, and other contaminants from entering into waterways, sanitary and storm drain systems, and ground.
 - 2. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
 - 3. Allow empty paint cans to dry before disposal.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

- A. Concrete Substrates, Nontraffic Surfaces:
 - 1. Latex System:
 - a. Prime Coat: Alkali-resistant, water-based primer.
 - b. Intermediate Coat: Matching topcoat.
 - c. Topcoat: Interior latex paint, eggshell.
- B. CMU Substrates:
 - 1. Water-Based Light-Industrial Coating System:
 - a. Block Filler: Interior/exterior latex block filler.
 - b. Intermediate Coat: Matching topcoat.

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c. Topcoat: Interior, water-based, light-industrial coating, semigloss.

C. Steel Substrates:

1. Water-Based Light-Industrial Coating System:

- a. Prime Coat: Primer, rust-inhibitive, water based.
- b. Intermediate Coat: Matching topcoat.
- c. Topcoat: Interior, water-based, light-industrial coating, semigloss.

D. Galvanized-Metal Substrates:

1. Water-Based Light-Industrial Coating System:

- a. Prime Coat: Cementitious galvanized primer.
- b. Intermediate Coat: Matching topcoat.
- c. Topcoat: Interior, water-based, light-industrial coating, semigloss.

END OF SECTION 099123

SECTION 099600 - HIGH-PERFORMANCE COATINGS

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 surface preparation and the application of high-performance coating systems on the following substrates:
 - 1. Exterior Substrates:
 - a. Steel, including existing pre-engineered metal building structural steel columns and beams.
 - b. Galvanized metal, including new steel purlins and exterior pipe and tube railings.
- B. Related Requirements:
 - 1. Section 051200 "Structural Steel Framing" for shop priming of structural steel with primers specified in this Section.
 - 2. Section 055213 "Pipe and Tube Railings" for painting pipe and tube railings with coatings specified in this Section.
 - 3. Section 099113 "Exterior Painting" for general field painting.
 - 4. Section 099123 "Interior Painting" for general field painting.

1.3 DEFINITIONS

- A. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D523.
- B. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D523.
- C. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D523.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
 - 1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
 - 2. Indicate VOC content.

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- B. Product List: Cross-reference to coating system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

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. Coatings: 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

1.6 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each coating system indicated 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 for application of each coating system.
 - a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
 - 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.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.8 FIELD CONDITIONS

- A. Apply coatings only when temperature of surfaces to be coated and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).

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- B. Do not apply coatings when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.
- C. Do not apply exterior coatings in snow, rain, fog, or mist.

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. Behr Paint Company; Behr Process Corporation.
 - 2. Benjamin Moore & Co.
 - 3. PPG Paints; PPG Industries, Inc.
 - 4. Sherwin-Williams Company (The).

2.2 HIGH-PERFORMANCE COATINGS, GENERAL

- A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."
- B. Material Compatibility:
 - 1. Materials for use within each paint system shall be 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, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
 - 3. Products shall be of same manufacturer for each coat in a coating system.
- C. Colors: As selected by Architect from manufacturer's full range.

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. 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 Architectural Painting Specification Manual" applicable to substrates and coating systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. 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 painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce coating systems indicated.
- D. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:
 - 1. SSPC-SP 5/NACE No. 1.
- E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied coatings.

3.3 APPLICATION

- A. Apply high-performance coatings according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."
 - 1. Use applicators and techniques suited for coating and substrate indicated.
 - 2. Coat surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 3. Coat backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 - 4. Do not apply coatings over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

- C. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.
- D. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

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 coatings for dry film thickness.
 - 1. Contractor shall touch up and restore coated surfaces damaged by testing.
 - 2. If test results show that dry film thickness of applied coating does not comply with coating manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with coating 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 coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from coating operation. Correct damage to work of other trades by cleaning, repairing, replacing, and recoating, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

3.6 EXTERIOR HIGH-PERFORMANCE COATING SCHEDULE

- A. Steel Substrates:
 - 1. Epoxy System MPI EXT 5.1F:
 - a. Prime Coat: Primer, epoxy, anti-corrosive, for metal, MPI #101.
 - b. Intermediate Coat: Epoxy, high build, low gloss, MPI #108.
 - c. Topcoat: Epoxy, gloss, MPI #77.
- B. Galvanized-Metal Substrates:
 - 1. Epoxy System MPI EXT 5.3C:

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- a. Prime Coat: Primer, epoxy, anti-corrosive, for metal, MPI #101.
- b. Intermediate Coat: Epoxy, matching topcoat.
- c. Topcoat: Epoxy, gloss, MPI #77.

END OF SECTION 099600

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DOCUMENT 102100 - TOILET COMPARTMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Solid plastic toilet compartments including the following: (Hiny Hiders)
 - 1. Floor mounted overhead-braced toilet compartments.
 - 2. Privacy screens.

1.2 REFERENCES

- A. ASTM A 666 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- B. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- C. National Fire Protection Association (NFPA) 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.
- D. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- E. United States EPA (Environmental Protection Agency) Registration - Bactericidal Surfaces Registered with the U.S. EPA to Legally Make Claims that these Materials Kill Infectious Bacteria.

1.3 SUBMITTALS

- A. Submit under provisions of Section 013400 "Shop Drawings, Product Data, and Samples".
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Provide layout drawings and installation details with location and type of hardware required.
- D. Verification Samples: For each finish product specified, two samples representing actual product, color, and patterns.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A company regularly engaged in manufacture of products specified in this section, and whose products have been in satisfactory use under similar service conditions for not less than 5 years.
- B. Installer Qualifications: A company regularly engaged in installation of products specified in this Section, with a minimum of 5 years experience.
- C. Materials: Doors, panels and pilasters, constructed from high density polyethylene (HDPE) resins. Partitions to be fabricated from polymer resins compounded under high pressure, forming a single component which is waterproof, nonabsorbent and has a self-lubricating surface that resists marks from pens, pencils, markers and other writing instruments. Cover all plastic components with a protective plastic masking.

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- D. Performance Requirements:
 - 1. Fire Resistance: Partition materials shall comply with the following requirements, when tested in accordance with ASTM E 84, Class B:
 - a. Tested to Meet ASTM E84, Class B flame spread/smoke developed rating.
 - 2. Material Fire Ratings:
 - a. National Fire Protection Association (NFPA) 286: Pass.
 - b. International Code Council (ICC): Class B.
 - 3. Antimicrobial Touch Surfaces: Hardware touch surfaces shall be manufactured from substrates that are registered with the U.S. EPA to kill specific bacteria tested according to U.S. EPA protocols.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.

1.6 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.7 WARRANTY

- A. Manufacturer guarantees its plastic against breakage, corrosion, and delamination under normal conditions for 25 years from the date of receipt by the customer. If materials are found to be defective during that period for reasons listed above, the materials will be replaced free of charge. Labor not included in warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Manufacturer: Scranton Products, which is located at: 801 E. Corey St.; Scranton, PA 18505; ASD Toll Free Tel: 800-445-5148; Fax: 855-376-6161; Email:[request info \(info@scrantonproducts.com\)](mailto:requestinfo@scrantonproducts.com); Web:<https://www.scrantonproducts.com>
 - 1. Fabricator: Santana Toilet Partitions.
 - 2. Fabricator: Comtec Toilet Partitions.
 - 3. Fabricator: Capitol Toilet Partitions.
- B. Substitutions: Similar products by other manufacturers may be accepted if submitted during bidding process as per 007000 General Conditions. Substitutions for convenience after bidding will not be accepted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 MATERIAL

- A. Plastic Panels: High density polyethylene (HDPE) suitable for exposed applications, waterproof, non-absorbent, and graffiti-resistant textured surface.
- B. Zinc Aluminum Magnesium and Copper Alloy (Zamac): ASTM B 86.
- C. Stainless Steel Castings: ASTM A167, Type 304.
- D. Aluminum: ASTM 6463-T5 alloy.

2.3 SOLID PLASTIC TOILET COMPARTMENTS

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- A. Basis of Design: Hiny Hiders Toilet Partitions as manufactured by and supplied by Scranton Products.
 - 1. Style: Floor mounted overhead-braced toilet compartments.
 - 2. Style: Floor-to-ceiling toilet compartments.

- B. Doors, Panels, and Pilasters: 1 inch (25 mm) thick with all edges rounded to a radius. Mount doors and dividing panels based on height of specified system.
 - 1. Door and Panel Height: 72 inches (1829 mm).
 - 2. Aluminum heat sink fastened to bottom edges.
 - 3. Door Design: Modern 4000.
 - 4. Door Design: Two panel side panel design.
 - 5. Panel Edge: Standard.
 - 6. Panel Edge: Shiplap.
 - 7. Pilasters: 82 inches (2083 mm) high and fastened to floor.

- C. Panel Color: Metallic series.
 - 1. Stainless - Hammered.

- D. Pilaster Shoes: 3 inches (76 mm), 20 gauge stainless steel. Secured to pilasters with a stainless steel tamper resistant Torx head sex bolt.

- E. Headrail: Heavy-duty extruded 6463-T5 alloy aluminum with anti-grip design. Finish to be clear anodized. Fastened to headrail brackets with stainless steel tamper resistant Torx head sex bolt, and fastened at the top of the pilaster with stainless steel tamper resistant Torx head screws.
 - 1. Headrail Brackets: 20 gauge stainless steel with satin finish. Secured to the wall with stainless steel tamper resistant Torx head screws.

- F. Wall Brackets:
 - 1. Aluminum Brackets.
 - 2. Brackets are fastened to pilasters with stainless steel tamper resistant Torx head screws and fastened to the panels with stainless steel tamper resistant Torx head sex bolts.
 - 3. Bracket Type: Continuous 71 inches (1804 mm) aluminum.

- G. Door Hardware:
 - 1. Continuous Aluminum Hinge:
 - a. Length: 71 inches (1803 mm).
 - 2. Door Strike/Keeper: Heavy-duty extruded aluminum 6436-T5 alloy with a bright dip anodized finish. Secured to pilasters with stainless steel tamper resistant Torx head sex bolts. Bumper shall be made of extruded black vinyl.
 - a. Style: 3 inches (76 mm) stainless steel emergency access.
 - 3. Latch Mechanism: Stainless Steel Slide Bolt Latch and Housing: Heavy-duty stainless steel type 304. The latch and housing to have a bright finish. The slide bolt and button to have a black anodized finish.
 - 4. Doors supplied with one coat hook/bumper and door pull made of chrome plated Zamak.
 - 5. Equip outswing handicapped doors with second door pull and door stop.

2.4 SOLID PLASTIC PRIVACY SCREENS

- A. Provide plastic privacy screens in urinal and entry toilet room applications as indicated or scheduled.

- B. Panels, and pilasters, if required, 1 inch (25 mm) thick with edges rounded to a radius. Screens to be mounted at 14 inches (356 mm) above the finished floor. Color as selected by Architect from manufacturer's full line of current colors.

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1. Aluminum heat sink fastened to bottom edges.
 2. Recycled Content: Minimum 25 percent.
- C. Screen Type: Wall mounted.
1. Urinal Screens: 24 inches (610 mm) wide by 42 inches (1067 mm) high.
- D. Wall Brackets: Extruded PVC plastic. Fastened to the panel/pilaster with stainless steel tamper resistant torx head screws and fastened to wall with stainless steel tamper resistant torx head sex bolts.
1. Length of Wall Brackets: 54 inches (1327 mm).

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Examine areas to receive toilet partitions, screens, and shower compartments for correct height and spacing of anchorage/blocking and plumbing fixtures that affect installation of partitions. Report discrepancies to the architect.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install partitions rigid, straight, plumb, and level manor, with plastic laid out as shown on shop drawings.
- C. Clearance at vertical edges of doors shall be uniform top to bottom and shall not exceed 3/8 inch (9.5 mm).
- D. No evidence of cutting, drilling, and/or patching shall be visible on the finished work.
- E. Finished surfaces shall be cleaned after installation and be left free of imperfections.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 102800 - TOILET, BATH, AND LAUNDRY 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. Public-use washroom accessories.
 - 2. Bathroom accessories.
 - 3. Custodial accessories.

1.3 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.
- B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
 - 1. Identify locations using room designations indicated.

1.4 INFORMATIONAL SUBMITTALS

- A. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

BOBBY ALFORD PAVILION PROJECT #1222

1.6 QUALITY ASSURANCE

- A. Source Limitations: For products listed together in the same Part 2 articles, obtain products from single source from single manufacturer.

1.7 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.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.8 WARRANTY

- A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, 0.031-inch (0.8-mm) 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 (0.9-mm) minimum nominal thickness.
- D. Galvanized-Steel Sheet: ASTM A 653/A 653M, with G60 (Z180) 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).
- H. ABS Plastic: Acrylonitrile-butadiene-styrene resin formulation.

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2.2 PUBLIC-USE WASHROOM ACCESSORIES

- A. Basis-of-Design Product: Subject to compliance with requirements, provide products by Bobrick Washroom Equipment, Inc. or comparable product by one of the following:
 - 1. A & J Washroom Accessories, Inc.
 - 2. American Specialties, Inc.
 - 3. Bradley Corporation.
 - 4. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.
 - 5. Tubular Specialties Manufacturing, Inc.
- B. Toilet Tissue (Roll) Dispenser: Bobrick #B-2892, twice jumbo roll dispenser.
- C. Seat Cover Dispenser: Bobrick #B-221.
- D. Liquid-Soap Dispenser: Bobrick #B-2112, surface mounted 40-fl oz capacity.
- E. Napkin Disposal:
 - 1. Basis-of-Design Product: Bobrick #B-270
 - 2. Description: Surface mounted.
- F. Grab Bar:
 - 1. Basis-of-Design Product: Bobrick #B-5806 series.
 - 2. Mounting: Flanges with concealed fasteners.
 - 3. Material: Stainless steel, 0.05 inch (1.3 mm) thick.
 - a. Finish: Satin finish with peened gripping surface.
 - 4. Outside Diameter: 1-1/4 inches (32 mm).
 - 5. Configuration and Length: As indicated on Drawings, horizontal legs (including vertical).
- G. Wall mounted electric dryer: Xlerator model XL-SB.
- H. Baby Changing Table: KOALA Kare, surface mounted.
 - 1. Color: As selected by Owner.
- I. Mirror: Bobrick #B-165 series stainless steel frame.

2.3 CUSTODIAL ACCESSORIES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - 1. A & J Washroom Accessories, Inc.
 - 2. American Specialties, Inc.
 - 3. Bobrick Washroom Equipment, Inc.

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4. Bradley Corporation.
5. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.
6. Tubular Specialties Manufacturing, Inc.

C. Custodial Mop and Broom Holder:

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. (Basis of Design): Bobrick model B-223x24.
2. Length: 24 inches.
3. Mop/Broom Holders: Three, spring-loaded, rubber hat, cam type.
4. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).

2.4 FABRICATION

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.
- B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

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. Grab Bars: Install to withstand a downward load of at least 250 lbf (1112 N), when tested according to ASTM F 446.

3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 102800

SECTION 123661 - SOLID SURFACING COUNTERTOPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid surface material countertops, backsplash, side splash, and apron.

1.2 ACTION SUBMITTALS

A. Product Data: For countertop materials.

B. Shop Drawings: For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.

1. Show locations and details of joints.
2. Show direction of directional pattern, if any.

C. Samples for Initial Selection: For each type of material exposed to view.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For solid surface material countertops to include in maintenance manuals. Include Product Data for care products used or recommended by Installer and names, addresses, and telephone numbers of local sources for products.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate countertops similar to that required for this Project, and whose products have a record of successful in-service performance.

B. Installer Qualifications: Fabricator of countertops.

1.6 FIELD CONDITIONS

A. Field Measurements: Verify dimensions of countertops by field measurements before countertop fabrication is complete.

1.7 COORDINATION

- A. Coordinate locations of utilities that will penetrate countertops or backsplashes.

PART 2 - PRODUCTS

2.1 SOLID SURFACE COUNTERTOP MATERIALS

- A. Solid Surface Material: Homogeneous-filled plastic resin complying with ISFA 2-01.
 - 1. Type: Provide Standard type unless Special Purpose type is indicated.
 - 2. Colors and Patterns: As selected by Architect from manufacturer's full range.
- B. Plywood: Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged, touch sanded, and FEMA wet-floodproof compliant per Technical Bulletin 2.

2.2 FABRICATION

- A. Fabricate countertops according to solid surface material manufacturer's written instructions and to the AWI/AWMAC/WI's "Architectural Woodwork Standards."
 - 1. Grade: Economy.
- B. Configuration:
 - 1. Front: Straight, slightly eased at top.
 - 2. Backsplash: Straight, slightly eased at corner.
 - 3. End Splash: Matching backsplash.
- C. Countertops:
 - 1. 3/4-inch- (19-mm-) thick, solid surface material with front edge built up with same material.
- D. Backsplashes: 1/2-inch- (12.7-mm-) thick, solid surface material.
- E. Fabricate tops with shop-applied edges unless otherwise indicated. Comply with solid surface material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
 - 1. Fabricate with loose backsplashes for field assembly.

2.3 INSTALLATION MATERIALS

- A. Adhesive: Product recommended by solid surface material manufacturer, and FEMA "wet-floodproof" compliance with Technical Bulletin 2, class 4 or 5 materials.
- B. Sealant for Countertops: Comply with applicable requirements in Section 079200 "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

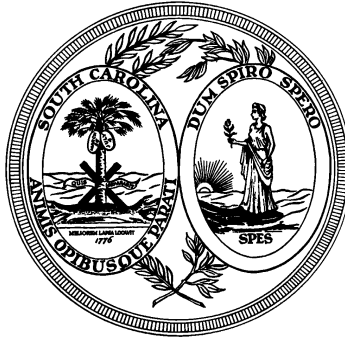
- A. Examine substrates to receive solid surface material countertops and conditions under which countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of countertops.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install countertops level to a tolerance of 1/8 inch in 8 feet (3 mm in 2.4 m), 1/4 inch (6 mm) maximum. Do not exceed 1/64-inch (0.4-mm) difference between planes of adjacent units.
- B. Bond joints with adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.
 - 1. Install metal splines in kerfs in countertop edges at joints. Fill kerfs with adhesive before inserting splines and remove excess immediately after adjoining units are drawn into position.
 - 2. Clamp units to temporary bracing, supports, or each other to ensure that countertops are properly aligned and joints are of specified width.
- C. Install backsplashes and end splashes by adhering to wall and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears.
- D. Install aprons to backing and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears. Fasten by screwing through backing. Pre-drill holes for screws as recommended by manufacturer.

END OF SECTION 123661

**DEPARTMENT OF COMMERCE
GRANTS ADMINISTRATION
COMMUNITY DEVELOPMENT BLOCK GRANT PROGRAM**



CONTRACT SPECIAL PROVISIONS

The following CDBG Contract Special Provisions should be used with all construction contracts, including housing rehabilitation, as applicable, and professional service contracts, where CDBG funds are being used in whole or in part.

CONTRACT SPECIAL PROVISIONS

1. **Definitions:** For purposes of this Contract, the following terms shall have the meanings set forth below:
 - (a) “Assistance” means the CDBG grant funds provided, or to be provided, to the Grantee by the State, pursuant to the Grant Award Agreement.
 - (b) “CDBG” means Community Development Block Grant.
 - (c) “Contract” means the contractual agreement between the Owner and the Contractor to which these Contract Special Provisions have been incorporated and made a part thereof.
 - (d) “Contractor” means the contractor whose services are retained pursuant to the Contract.
 - (e) “Grantee” means the unit of local government designated as the recipient of the Assistance in the Grant Award and signing the acceptance provision of the Grant Award.
 - (f) “HUD” means U.S. Department of Housing and Urban Development, which is the federal agency that awards and has authority over CDBG funding to the State.
 - (g) “Owner” means the Grantee or Subrecipient, as applicable.
 - (h) “Project” means the project for which the services of the Contractor have been retained pursuant to the Contract which are funded, in whole or in part, with CDBG funds.
 - (i) “State” means the State of South Carolina, or that agency, agency division, or Office of State government which has been delegated the responsibility for administering the CDBG program for the State of South Carolina, as appropriate.
 - (j) “Subrecipient” means the agent of the unit of local government as designated by an agreement.
 - (k) “Labor Surplus Area” means a civil jurisdiction that has an unemployment rate at least 20% above the average unemployment rate for all states, the District of Columbia, and Puerto Rico during the previous two calendar years. The Department of Labor issues the labor surplus area list on a fiscal year basis.

2. **Prime Contractor Responsibilities:** The Contractor is required to assume sole responsibility for the complete effort and enforcement of laws and regulations under this Contract. The Owner will consider the Contractor to be the sole point of contact with regard to contractual matters. All contractors, including subcontractors must be registered in SAM and eligible to receive federal contracts.
3. **Federal and State Laws:** The Contractor agrees to comply with all CDBG requirements as well as other federal and state laws, regulations, or Executive Orders. The State reserves the right to add or delete terms and conditions of this Contract as may be required by revisions and additions or changes in the requirements, regulations, and laws governing the CDBG Program.
4. **Procurement and Contracting:** In accordance with 2 CFR Part 200, the cost plus a percentage of cost and percentage of construction cost methods of contracting shall not be used. This provision shall supersede any conflicting provision in an executed contract document or agreement funded in whole or in part with CDBG funds.
5. **Ownership:** Ownership of all real or personal property, acquired in whole or in part with CDBG funds for use on this Project, shall be vested in the Grantee, unless otherwise authorized by the State. When the Grantee determines that the property is no longer required for the purposes of this Project, the Grantee must notify the State and obtain approval for disposition of the property in accordance with applicable guidelines.
6. **Copyright:** Except as otherwise provided in the terms and conditions of this Contract, the Contractor paid through this Contract is free to copyright any books, publications or other copyrightable materials developed in the course of the Project and under this Contract. However, HUD and the State reserve a royalty-free, non-exclusive and irrevocable license to reproduce, publish or otherwise use and to authorize others to use, for Federal government and State purposes:
 - (a) the copyright in any work developed under this Contract; and
 - (b) any rights of copyright to which a subcontractor purchases ownership with grant support.

The Federal government's rights and the State's rights identified above must be conveyed to the publisher and the language of the publisher's release form must insure the preservation of these rights.
6. **Reporting Requirements:** The Contractor agrees to complete and submit all reports, in such form and according to such schedule, as may be required by the State or HUD. Further, the Contractor agrees to require any subcontractors to submit reports that may be required and to incorporate such language in its agreements. Failure to meet deadlines with the required information could result in sanctions.
7. **Access to Records:** All records with respect to all matters covered by this Contract shall be made available at any time for audit and inspection by HUD, the State or the Grantee or their representatives upon their request.
8. **Maintenance of Records:** Records for non-expendable property purchased totally or partially with Federal funds must be retained for five years after final close-out of the grant. All other pertinent contract records including financial records, supporting documents and

statistical records shall be retained for a minimum of five years after the final close-out report. However, if any litigation, claim, or audit is started before the expiration of the five year period, then records must be retained for five years after the litigation, claim or audit is resolved.

9. **Confidential Information:** Any reports, information, data, etc., given to, prepared by, or assembled by the Contractor under this Contract, which the Grantee or the State requests to be kept confidential, shall not be made available to any individual or organization by the Contractor without prior written approval of the Grantee or the State, as applicable.
10. **Reporting of Fraudulent Activity:** If at any time during the term of this Contract anyone has reason to believe by whatever means that, under this or any other program administered by the State, a recipient of funds has improperly or fraudulently applied for or received benefits, monies or services pursuant to this Contract or any other contract, such information shall be reported immediately to the appropriate authorities.
11. **Political Activity:** None of the funds, materials, property or services provided directly or indirectly under this Contract shall be used for any partisan political activity, or to further the election or defeat of any candidate for public office or otherwise in violation of the provisions of Section 8-13-765 of the Code of Laws of South Carolina, 1976, as amended.
12. **Conflicts of Interest and Ethical Standards, South Carolina Consolidated Procurement Code:** The following provisions regarding “conflicts of interest” apply to the use and expenditure of CDBG funds by the Grantee and its subrecipients, including the Contractor.

In the procurement of supplies, equipment, construction and services, the more restrictive conflict of interest provisions of the State of South Carolina Ethics, Government Accountability and Campaign Reform Act of 1991 or of the Contractor shall apply.

In cases not governed by the above, such as the acquisition and disposition of real property and the provision of CDBG assistance to individuals, businesses and other private entities, the following provisions shall apply.

Except for eligible administrative or personnel costs, the general rule is that no person who is an employee, agent, consultant, officer, or elected or appointed official of the State or a unit of general local government or any designated public agencies or subrecipient which are receiving CDBG funds who exercise or have exercised any function or responsibilities with respect to CDBG activities assisted herein or are in a position to participate in a decision making process or gain inside information with regard to such activities, may obtain a financial interest or benefit from the activity, or have an interest in any contract, subcontract or agreement with respect thereto, or the proceeds thereunder either for themselves or those with whom they have family or business ties during their tenure or for one year thereafter. Exceptions may be granted by the State on a case by case basis as requested upon full disclosure in writing.

Should any governmental entity, contractor, subcontractor, employee or official know or perceive any breach of ethical standards or conflict of interest under the CDBG grant awarded to the Grantee or any other CDBG grant, they shall immediately notify in writing the Department of Commerce, Grants Administration, 1201 Main Street, Suite 1600, Columbia, South Carolina, 29201. If the State finds any circumstances that may give rise to

a breach of ethical standards or conflict of interest, under any grant, they shall notify the participating governmental entity and the State Ethics Commission as appropriate. The State may undertake any administrative remedies it deems appropriate, where there is a breach of ethical standards or conflict of interest under the regulations governing the CDBG Program and the State policies.

- 13. Applicable Law:** In addition to the applicable Federal laws and regulations, this Contract is also made under and shall be construed in accordance with the laws of the State. By execution of this Contract, the Contractor agrees to submit to the jurisdiction of the State for all matters arising or to arise hereunder, including but not limited to performance of said Contract and payment of all licenses and taxes of whatever kind or nature applicable hereto.
- 14. Limitation of Liability:** The Contractor will not assert in any legal action by claim or defense, or take the position in any administrative or legal procedures that he is an agent or employee of the Owner. This provision is not applicable to contracts for CDBG administration services where the Contractor is a Council of Government. The State shall not be liable for failure on the part of the Grantee or any other party to perform all work in accordance with all applicable laws and regulations. The Grantee agrees to defend, indemnify, and hold harmless the State from and against all claims, demands, judgments, damages, actions, causes of actions, injuries, administrative orders, consent agreement and orders, liabilities, penalties, costs, and expenses of any kind whatsoever, including, without limitation, claims arising out of loss of life, injury to persons, property, or business or damage to natural resources in connection with the activities of the Grantee and any other third parties in a contractual relationship with the Grantee, or a subsidiary, whether or not occasioned wholly or in part by any condition, accident, or event caused by any act or omission of the State as a result of the Assistance.
- 15. Legal Services:** No attorney-at-law shall be engaged through the use of any funds provided under this Contract in any legal action or proceeding against the State, the Grantee, any local public body or any political subdivision.
- 16. Contract:** If any provision in this Contract shall be held to be invalid or unenforceable, the remaining portions shall remain in effect. In the event such invalid or unenforceable provision is considered an essential element of this Contract, the parties shall promptly negotiate a replacement provision, which addresses the intent of such provision.
- 17. Amendments:** Any changes to this Contract affecting the scope of work of the Project must be approved, in writing, by the Owner and the Contractor and shall be incorporated in writing into this Contract. Any amendments of the original contract must have written approval by the State prior to execution.
- 18. Termination for Convenience:** This Contract may be terminated for convenience in accordance with 2 CFR Part 200.
- 19. Sanctions:** If the Contractor fails or refuses to comply with the provisions set forth herein, the State or Owner may take any or all of the following actions: cancel, terminate or suspend in whole or in any part the contract, or refrain from extending any further funds to the Contractor until such time as the Contractor is in full compliance.
- 20. Subcontracting:** If any part of the work covered by this Contract is to be subcontracted, the Contractor shall identify the subcontracting organization and the contractual arrangements

made therewith to the Owner and to the State. All subcontracts must be approved by the Owner and the State to insure they are not debarred or suspended by the Federal or State governments and to insure the Owner and the State understand the arrangements.

21. Subcontracting with Small and Minority Firms, Women's Business Enterprise and Labor Surplus Areas:

It is national policy to award a fair share of contracts to disadvantaged business enterprises (DBEs), small business enterprises (SBEs), minority business enterprises (MBEs) and women's business enterprises (WBEs). Accordingly, affirmative steps must be taken to assure that DBEs, SBEs, MBEs and WBEs are utilized when possible as sources of supplies, equipment, construction and services. Affirmative steps shall include the following:

- (a) Including qualified DBEs, SBEs, MBEs and WBEs on solicitation lists;
- (b) Assuring that DBEs, SBEs, MBEs and WBEs are solicited whenever they are potential sources;
- (c) Whenever economically feasible, dividing total requirements into smaller tasks or quantities so as to permit maximum participation by DBEs, SBEs, MBEs and WBEs;
- (d) Where the requirement permits, establishing delivery schedules which will encourage participation by DBEs, SBEs, MBEs and WBEs;
- (e) Using the services and assistance of the Small Business Administration, Minority Business Development Agency, the State Office of Small and Minority Business Assistance, the U.S. Department of Commerce and the Community Services Administration as required; and
- (f) Requiring the subcontractor, if any, to take the affirmative actions outlined in (1) – (5) above.

22. Debarment Certification: The Contractor must comply with Executive Orders 12549 and 12689 regarding Federal debarment and suspension regulations prior to entering into a financial agreement for any transaction as outlined below.

- (a) Any procurement contract for goods and services, regardless of type, expected to equal or exceed the Federal procurement small purchase threshold (which is \$100,000 and is cumulative amount from all federal funding sources).
- (b) Any procurement contract for goods and services, regardless of amount, under which the Contractor will have a critical influence on or substantive control over the transaction.

In addition, no contract may be awarded to any contractors who are ineligible to receive contracts under any applicable regulations of the State.

23. South Carolina Illegal Immigration Reform Act: The Owner and the Contractor are required to comply with the South Carolina Illegal Immigration Reform Act (signed June 4, 2008) requiring verification of lawful presence in the United States of any alien eighteen years of age or older who has applied for state or local public benefits, as defined in 8 U.S.C. Section 1621, or for federal public benefits, as defined in U.S.C. Section 1611.

24. Equal Employment Opportunity: 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 State.

In carrying out the Project, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor must take affirmative action to insure that applicants for employment are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, 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 shall post in conspicuous places, available to employees and applicants for employment, notices to be provided by the State setting forth the provisions of this non-discrimination clause. The Contractor shall state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin. The Contractor will, in all solicitations or advertisements for employees by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin. The Contractor shall incorporate the foregoing requirements of this paragraph in all of its subcontracts for the Project unless exempted by rules, regulations, or orders of the State 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 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 by the State advising the said labor union or workers' representatives of the Contractor's commitment under this Section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the State, or pursuant thereto, and will permit access to its books, records, and accounts by HUD and the State for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

In the event of the Contractor's noncompliance with the non-discrimination clauses of this Contract or with any of such 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 State government contracts or federally assisted construction contract procedures authorized in Executive Order 11246 of September 24, 1965, or by rules, regulations, or orders of the State, or as otherwise provided by law.

25. **Age Discrimination:** In accordance with 45 CFR, Parts 90 and 91, the Contractor agrees there shall be no bias or age discrimination as to benefits and participation under this Contract.
26. **Section 109 of the Housing and Community Development Act of 1974:** No person in the United States shall on the grounds of race, color, national origin or sex be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity funded in whole or in part with funds made available under the CDBG program of the State.
27. **Section 504 of the Rehabilitation Act of 1973, as amended:** The Contractor agrees that no otherwise qualified individual with disabilities shall, solely by reason of his disability, be

denied the benefits, or be subjected to discrimination including discrimination in employment, any program or activity that receives the benefits from the Assistance.

28. Section 3, Compliance and Provision of Training, Employment and Business

Opportunities: The work to be performed under this Contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, (12 USC § 1701u). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by Section 3 shall, to the greatest extent feasible be directed to low and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

The parties to this said Contract agree to comply with HUD's regulations in 24 CFR Part 135, which implement Section 3. As evidenced by their execution of this Contract, the parties to this Contract certify that they are under no contractual or other impediment that would prevent them from complying with the 24 CFR Part 135 regulations.

The contractor agrees to send to each labor organization or representative of workers with which the Contractor has a collective bargaining agreement or other understanding, if any, a notice advising the organization or workers' representative of the contractor's commitments under this Section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions; the qualifications for each; and the name and location of person(s) taking applications for each of the positions; and the anticipated date the work shall begin. The Contractor agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 CFR Part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR Part 135. The Contractor will not subcontract with any subcontractor where the Contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR Part 135.

The Contractor will certify that any vacant employment positions including training positions, that are filled (1) after the Contractor is selected but before this Contract has been executed, and (2) with persons other than those to whom the regulations of 24 CFR Part 135 require employment opportunities to be directed, were not filled to circumvent the Contractor's obligations under 24 CFR Part 135.

The Contractor agrees to submit such reports as required to document compliance with 24 CFR Part 135. Noncompliance with the regulations in 24 CFR Part 135 may result in sanctions, termination of this Contract for default, and debarment or suspension from future HUD assisted contracts.

29. Lead-Based Paint: The construction or rehabilitation of residential structures with any portion of the Assistance is subject to the HUD Lead-Based Paint regulations found at 24 CFR Part 35. Any grants or loans made by the Grantee for the rehabilitation of residential structures with any portion of the Assistance shall be made subject to the provisions for the elimination of lead-base paint hazards under subpart B of said regulations, and the Grantee shall be responsible for the inspections and certifications required under Section 35.14(f) thereof.

30. Compliance with Air and Water Acts: (Applicable to construction contracts and related subcontracts exceeding \$100,000) This Contract is subject to the requirements of the Clean Air Act, as amended, 42 USC § 7401 et seq., the Federal Water Pollution Control Act (Clean Water Act), as amended, 33 USC § 1251 et seq., and the regulations of the Environmental Protection Agency with respect to 40 CFR Part 15, as amended from time to time, and the South Carolina Stormwater Management and Sediment Reduction Act. In particular, the following are required:

- (a) A stipulation by the Contractor or subcontractor that any facility to be utilized in the performance of any nonexempt contract or subcontract is not listed on the List of Violating Facilities, issued by the Environmental Protection Agency (EPA) pursuant to 40 CFR § 15.20.
- (b) Agreement by the Contractor to comply with all the requirements of Section 114 of the Clean Air Act, as amended (42 USC § 7414) and Section 308 of the Federal Water Pollution Control Act, as amended (33 USC § 1318) relating to inspection, monitoring, entry, reports and information, as well as all other requirements specified in said Sections 114 and 308, and all regulations and guidelines issued thereunder.
- (c) A stipulation that as a condition of award of contract prompt notice will be given of any notification received from the Director, Office of Federal Activities, EPA, indicating that a facility utilized or to be utilized for the contract under consideration is to be listed on the EPA list of Violating Facilities.
- (d) Agreement by the Contractor that the Contractor will include or cause to be included the criteria and requirements in these subparagraphs (1) through (4), in every nonexempt subcontract and requiring that the Contractor will take such action as the State may direct as a means of enforcing such provisions.

In no event shall any amount of the Assistance be utilized with respect to a facility which has given rise to a conviction under section 113(c)(1) of the Clean Air Act or Section 309(c) of the Federal Water Pollution Control Act.

31. Federal Labor Standards Provisions: (*Applicable to construction contracts in excess of \$2,000 or residential rehabilitation contracts involving more than eight units*)

The Project or program to which the construction work covered by this Contract pertains is being assisted by the United States of America and the Federal Labor Standards Provisions as set forth on Attachment 1 are included in this Contract pursuant to the provisions applicable to such Federal assistance. These provisions must be complied with or sanctions will be instituted.

Attachment 1

U.S. Department of Housing and Urban Development, Office of Labor Relations form HUD-4010 (06/2009) ref. Handbook 1344.1

A. 1. (i) Minimum Wages. All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached thereto and made a part thereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5 (a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification of the time actually work therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification an wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible, place where it can be easily seen by the workers.

(ii) (a) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

- (1)** The work to be performed by the classification requested is not performed by a classification in the wage determination; and
- (2)** The classification is utilized in the area by the construction industry; and
- (3)** The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so

advise HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

(c) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1214-0140.)

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

2. Withholding. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federal-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice trainee or helper, employed or working on the site of the work, all or part of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension or any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for an on account of the contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

3. (i) Payrolls and basic records. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work preserved for a period of three

years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section 1 (b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5 (a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment of provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices and trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017.)

(ii) (a) the contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i). This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, DC 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget Under OMB Control Number 1215-0129.)

(b) Each payroll submitted shall be accompanied by a “Statement of Compliance,” signed by the contractor or subcontractor or his or her agent who pays for supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be maintained under 29 CFR 5.5 (a)(3)(i) and that such information is correct and complete;

(2) That each laborer or mechanic (including each apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the “Statement of Compliance” required by subparagraph A.3.(ii)(b).

(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under subparagraph A.3.(i) available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees.

(i) **Apprentices.** Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment Training Administration, Office of Apprenticeship Training, Employer and Training Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen in any craft classification shall not be greater than the ratio permitted to the contractor as to his entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as state above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ration permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every Trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under 29 CFR Part 5 shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor will insert in any subcontracts the clauses contained in subparagraphs 1 through 11 of this paragraph A and such other clauses as HUD or its designee may by appropriate instructions require, and a copy of the applicable prevailing wage decision, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this paragraph.

7. Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause

include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

10. (i) Certification of Eligibility. By entering into this contract the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S. Criminal Code, Section 1010, Title 18, U.S.C., "Federal Housing Administration transactions", provided in part: "Whoever, for the purpose of . . . influencing in any way the action of such Administration . . . makes, utters or publishes any statement knowing the same to be false . . . shall be fined not more than \$5,000 or imprisoned not more than two years, or both."

11. Complaints, Proceedings, or Testimony by Employees. No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. Contract Work Hours and Safety Standards Act. The provisions of this paragraph B are applicable only where the amount of the prime contract exceeds \$100,000. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

(1) Overtime Requirements. No Contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violations of the clause set forth in subparagraph (1) of this paragraph, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the clause set forth in subparagraph (1) of this paragraph.

(3) Withholding for unpaid wages and liquidated damages. HUD or its designee shall upon its own action or upon written request of an authorized representative of the

Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract, or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2) of this paragraph.

(4) **Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

C. Health and Safety. The provisions of this paragraph C are applicable only where the amount of the prime contract exceeds \$100,000.

(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to this health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, 40 USC 3701 et. seq.

(3) The Contractor shall include the provisions of this paragraph in every subcontract so that such provisions will be binding on each subcontractor. The Contractor shall take such action with respect to any subcontract as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

BIDDER'S SECTION 3 ESTIMATED NEW HIRES

NOTE: This form must be filled out by the contractor and is used to determine if any new hires will be needed as part of the project and if so, if any will be filled with Section 3 residents.

Job Category	Total Estimated Positions Needed (for this project)	No. Positions Occupied by Permanent Employees (for this project)	Number of Positions Not Occupied (for this project)	Number of Positions to be Filled with Section 3 Residents (for this project)
Officer/Supervisors				
Professionals				
Technical				
Hsq. Sales/Rental Mgmt.				
Office/Clerical				
Service Workers				
Others				
TRADE:				
Journeyman				
Apprentices				
Trainees				
Others				

Section 3 Resident Definition:

Individual residing in a public housing project or within the non-metropolitan county in which the project is located and whose income does not exceed 80% of the higher of the median income, adjusted by family size, for the county of residence or the non-metropolitan area of the state.

Company

Project Title

CDBG Grant Number

Name of Person Completing Form

Date

SOUTH CAROLINA ILLEGAL IMMIGRATION REFORM ACT
CONTRACTOR CERTIFICATION

In accordance with the requirements of the South Carolina Illegal Immigration Reform Act, Contractor Name (“Contractor”) hereby certifies that it is currently in compliance with the requirements of Title 8, Chapter 14 of the S.C. Code Annotated and will remain in compliance with such requirements throughout the term of its contract with City of Georgetown (“Owner”).

Contractor hereby acknowledges that in order to comply with requirements of S.C. Code Annotated Section 8-14-20(B), it will:

1. Register and participate in the federal work authorization program (E-Verify) to verify the employment authorization of all new employees; and require agreement from its subcontractors, and through the subcontractors, the sub-subcontractors, to register and participate in the federal verification the employment authorization of all new employees.

Contractor agrees to provide to Owner any documentation required to establish the applicability of the South Carolina Illegal Immigration Reform Act to the Contractor, subcontractor, or sub-subcontractor. Contractor further agrees that it will provide Owner with any documentation required to establish that the Contractor and any subcontractors or sub-subcontractors are in compliance with the requirements of Title 8, Chapter 14 of the S.C. Code Annotated.

Date: _____

By: _____

Title: _____

CONTRACTOR’S SECTION 3 NEW HIRES REPORT

(Note: This report must be submitted at the conclusion of construction and identify any new construction hires for the project and if any of those positions were filled with Section 3 residents.)

Job Category	Total Positions Employed on the Project	No. Positions Occupied by Permanent Employees	Number of Positions Not Occupied	Number of Positions Filled with Section 3 Residents
Officer/Supervisors				
Professionals				
Technical				
Hsq. Sales/Rental Mgmt.				
Office/Clerical				
Service Workers				
Others				
TRADE:				
Journeyman				
Apprentices				
Trainees				
Others				
TRADE:				
Journeyman				
Apprentices				
Trainees				
Others				

Section 3 Resident

Individual residing in a public housing project or within the non-metropolitan county in which the project is located and whose income does not exceed 80% of the higher of the median income, adjusted by family size, for the county of residence or the non-metropolitan area of the state.

Company

Project Name

Project Number

Person Completing Form

Date

10/16

**CERTIFICATION REGARDING DEBARMENT, SUSPENSION,
INELIGIBILITY AND VOLUNTARY EXCLUSION LOWER TIER COVERED TRANSACTIONS**

This certification is required by the regulations implementing Executive Orders 12549 and 12689, Debarment and Suspension, and 2 CFR Part 200, Participants' responsibilities.)

(BEFORE COMPLETING CERTIFICATION, READ INSTRUCTIONS BELOW)

- (1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principles are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
- (2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Grant Number: CV1-019

Name of Participant: _____

Address of Participant: _____

Name and Title of Authorized Representative	Signature	Date
<p>1. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.</p> <p>2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.</p> <p>3. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.</p> <p>4. The terms "covered transaction", "debarred", "suspended", "ineligible", "lower tier covered transaction", "participant", "person", "primary covered transaction", "principal", "proposal", and "voluntarily excluded", as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Orders 12549 and 12689.</p> <p>5. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.</p> <p>6. The prospective lower tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion -- Lower Tier Covered Transactions", without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.</p> <p>7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may check the System for Award Management (SAM).</p> <p>8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.</p> <p>9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.</p>		

Sample Section 3 Resident Certification Form

ELIGIBILITY FOR PREFERENCE

A Section 3 Resident seeking the preference in training and employment provided by this part shall certify, or submit evidence to the recipient contractor or subcontractor, if requested, that the person is a Section 3 Resident, as defined in Section 135.5.

I _____, (Print Name) am a resident of _____ (City, County, State) and qualify as a Section 3 Resident because I am a public housing resident OR because my household income does not exceed the income guidelines by family size as published at the bottom of this form*.

Name: _____ Telephone: _____

Address: _____ (will be verified)

FY 2012 – HOUSEHOLD INCOME GUIDELINES

Place a Check on the line that is applicable	Family Size	Low Income *
	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	

* Circle the appropriate column based on household size and income – income limits are attached and/or can be downloaded from the www.cdbgSC.com website.

I hereby certify that the information provided by me to be true and correct, and understand any falsification of any of the information could subject me to disqualification from participation and punishment under the law.

Signature

Date

Print Name

Section 3 Information Sheet for Contractors/Businesses

What is Section 3?

Section 3 is a provision of the Housing and Urban Development (HUD) Act of 1968. The purpose of Section 3 is to ensure that employment and other economic opportunities generated by certain HUD financial assistance shall, to the greatest extent feasible, and consistent with existing Federal, State, and local laws and regulation, be directed to low- and very low-income persons, particularly those who are recipients of government assistance for housing, and to business concerns which provide economic opportunities to low- and very low-income persons.

What is a Section 3 worker?

Section 3 workers are:

- Any worker who currently or when hired (within the past five years) is below documented to fit at least one of the below categories:
 - The worker's income for the previous or annualized calendar year is below the income limit established by HUD; or
 - The worker is employed by a Section 3 business concern
 - The worker is a YouthBuild participant

What is a Targeted Section 3 Worker

- A worker employed by a Section 3 business concern; or
- A worker who currently fits or when hired (within the past 5 years) is documented to fit at least one of the following categories:
 - Living within the service area or the neighborhood of the project, meaning; or
 - A YouthBuild participant

What is a Section 3 Business Concern?

A Section 3 Business Concern meets one of the following criteria:

- Is 51 percent or more owned and controlled by low- or very low-income persons;
- Over 75 percent of the labor hours performed for the business over the prior 3-month period were performed by Section 3 workers; or
- Is at least 51 percent owned and controlled by current public housing residents; residents who currently live in Section 8-assisted housing

What types of economic opportunities should be made available under Section 3?

- Job training
- Employment
- Contracts

Examples of Opportunities include:

- | | | |
|------------------------|-------------------------|-----------------------|
| • Accounting | • Electrical | • Marketing |
| • Architecture | • Elevator Construction | • Painting |
| • Appliance repair | • Engineering | • Payroll Photography |
| • Bookkeeping | • Fencing | • Plastering |
| • Bricklaying | • Florists | • Plumbing |
| • Carpentry | • Heating | • Printing Purchasing |
| • Carpet Installation | • Iron Works | • Research |
| • Catering | • Janitorial | • Surveying |
| • Cement/Masonry | • Landscaping | • Tile setting |
| • Computer/Information | • Machine | • Transportation |
| • Demolition | • Operation | • Word processing |
| • Drywall | • Manufacturing | |

Who receives priority under Section 3?

For training and employment:

- Persons in public and assisted housing
- Persons in the area where the HUD financial assistance is spent
- Participants in HUD Youthbuild programs
- Homeless persons

For contracting:

- Businesses that meet the definition of a Section 3 business concern

How can businesses find Section 3 workers to work for them?

Businesses can recruit Section 3 residents in public housing developments and in the neighborhoods where the HUD assistance is being spent. Effective ways of informing residents about available training and job opportunities are:

- Contacting resident organizations, local community development and employment agencies
- Distributing flyers
- Posting signs
- Placing ads in local newspapers

Are recipients, contractors, and subcontractors required to provide long-term employment opportunities, not simply seasonal or temporary employment?

Recipients are required, to the greatest extent feasible, to provide all types of employment opportunities to low and very low-income persons, including permanent employment and long-term jobs.

Grantees and contractors are encouraged to have Section 3 workers make up at least 25 percent and targeted workers make up 5 percent of their permanent, full-time staff.

A Section 3 worker who has been employed for 5 years may no longer be counted towards meeting the 25 percent for section 3 and 5 percent for targeted section 3 worker requirements. This encourages recipients to continue hiring Section 3 and targeted Section 3 workers when employment opportunities are available.

What if it appears an entity is not complying with Section 3?

There is a complaint process. Section 3 and targeted workers, business concerns, or a representative for either may file a complaint if it seems a recipient is violating Section 3 requirements are being on a HUD-funded project.

Will HUD require compliance?

Yes. HUD monitors the performance of contractors, reviews annual reports from recipients, and investigates complaints. HUD also examines employment and contract records for evidence that recipients are training and employing Section 3 workers and awarding contracts to Section 3 business concerns.

Section 3 Business Concern Self-Certification

BASIC INFORMATION

1. Company Name: _____

2. Company Address: _____

City _____ State _____ Zip _____ County _____

3. Telephone Number: _____ Fax Number: _____
Email address: _____

4. Contractor's License: Class A B C N/A License Number: _____

5. Business License _____ Number Federal ID Number _____

6. Type of Business: _____

TYPES OF SECTION 3 BUSINESS ENTERPRISES

Please check "Yes" or "No". If you answer "YES" to one or more of the following questions, you may designate your company as a Section 3 Business Enterprise.

1. 51% or more of your business is owned by a Section 3 workers*; or

Yes No

Attach list of Section 3 owners and income certifications

2. Over 75% of the labor hours over the previous 3-month period are performed by Section 3 workers; or

Yes No

Attach list of employees, Section 3 employees, and self certifications

3. At least 51% owned and controlled by current residents of public housing or Section 8 assisted housing.-

Yes No

Attach list of subcontracted businesses, types and amounts

VERIFICATION - *The company hereby agrees to provide, upon request, documents verifying the information provided on this form.*

I declare and affirm under penalty of law that the statements made herein are true and accurate to the best of my knowledge. I understand that falsifying information and incomplete statements will disqualify certification status.

Signature of Business Owner or Authorized Representative: _____

Signature: Date: _____

Attested by: Date: _____

***Section 3 Worker and Targeted Section 3 Worker definitions can be found in the "Section 3 Definitions" document.**

"General Decision Number: SC20220020 09/16/2022

Superseded General Decision Number: SC20210020

State: South Carolina

Construction Type: Building

Counties: Georgetown, Jasper and Williamsburg Counties in South Carolina.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

<p>If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p>	<ul style="list-style-type: none"> . Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least \$15.00 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2022.
<p>If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>	<ul style="list-style-type: none"> . Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least \$11.25 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Modification Number	Publication Date
0	01/07/2022
1	02/18/2022
2	02/25/2022
3	09/16/2022

ELEC0508-009 09/01/2018

JASPER

	Rates	Fringes
ELECTRICIAN.....	\$ 26.00	10.94

ELEC0776-001 03/01/2021

REMAINING COUNTIES

	Rates	Fringes
ELECTRICIAN.....	\$ 28.84	8.97+12%

Work more than 40 ft. above the ground on or from swinging scaffolds, boson chairs, or raw structural steel: \$1.00 per hour additional.

* ELEV0032-003 01/01/2022

JASPER

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 45.68	36.885+a+b

PAID HOLIDAYS:

a. New Year's Day, Memorial Day, Independence Day, Labor Day, Vetern's Day, Thanksgiving Day, the Friday after Thanksgiving, and Christmas Day.

b. Employer contributes 8% of regular hourly rate to vacation pay credit for employee who has worked in business more than 5 years; 6% for less than 5 years' service.

ELEV0135-002 01/01/2022

REMAINING COUNTIES

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 44.80	36.885+a+b

PAID HOLIDAYS:

a. New Year's Day, Memorial Day, Independence Day, Labor Day, Vetern's Day, Thanksgiving Day, the Friday after Thanksgiving, and Christmas Day.

b. Employer contributes 8% of regular hourly rate to vacation pay credit for employee who has worked in business more than 5 years; 6% for less than 5 years' service.

 * SUSC2011-016 08/31/2011

	Rates	Fringes
CARPENTER, Includes Form Work....	\$ 16.00	0.00
LABORER: Common or General.....	\$ 10.42 **	0.99
LABORER: Pipelayer.....	\$ 12.50 **	1.23
OPERATOR: Backhoe/Excavator/Trackhoe.....	\$ 16.95	1.83
PAINTER: Brush, Roller and Spray.....	\$ 13.50 **	0.00
PIPEFITTER.....	\$ 19.75	3.96
PLUMBER.....	\$ 17.20	2.65
SHEET METAL WORKER (HVAC Duct Installation Only).....	\$ 19.15	1.15
TRUCK DRIVER.....	\$ 13.50 **	1.27

 WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$15.00) or 13658 (\$11.25). Please see the Note at the top of the wage determination for more information.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after

award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010

08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISIO"



November 22, 2022

Mr. Steve Coe
Rosenblum Coe Architects, Inc.
1643 Means Street
Charleston, South Carolina 29412

Subject: Asbestos Inspection Update
Bobby Alford Center at East Bay Park
Georgetown, South Carolina
Asbestos Inspections, LLC Project # 2022-01-486

Dear Mr. Coe:

Asbestos Inspections, LLC has completed an Update for an Asbestos Inspection Report for the Bobby Alford Center located at 311 Greenwich Drive, in Georgetown, South Carolina. The original asbestos inspection was conducted by us dated April 19, 2017, which did identify asbestos containing materials (ACMs).

At this time, we have been requested to update our inspection that was completed in 2017. We reported to the site on November 21, 2022 to perform a visual inspection. During our inspection, we did not identify any additional suspect materials that would need sampling. Additionally, the condition of the majority of the building materials sampled were found to be in similar condition as our 2017 inspection with the exception of the ceiling insulation. The ceiling insulation has begun to delaminate and is in significantly damaged condition.

Based on our original inspection in 2017, the following ACMs remain as outlined in our report dated May 3, 2017 and remains in good condition:

- F1 – Black mastic associated with non-asbestos containing light gray 12”x12” floor tile throughout the main portion of the building and under carpet in the front office areas (approximately 6,200 sf).
- F2 – Black mastic associated with non-asbestos containing white 12”x12” floor tile at front door (approximately 20 sf).
- F3 – Beige 9”x9” floor tile with associated black mastic in rear office areas under carpet (approximately 1,000 sf).

A copy of our original report is attached along with updated photographs from our recent site visit. No further testing is required at this time. Our report dated May 3, 2017, is in compliance with current regulations. Any abatement activities should be done by a properly licensed asbestos abatement company. Should the flooring be removed in a friable manner, an Asbestos Abatement Plan will be required along with asbestos air monitoring.

I appreciate this opportunity to provide my services. Should you have any questions concerning this summary, please contact me at (843) 397-7008 or (843) 995-5197.

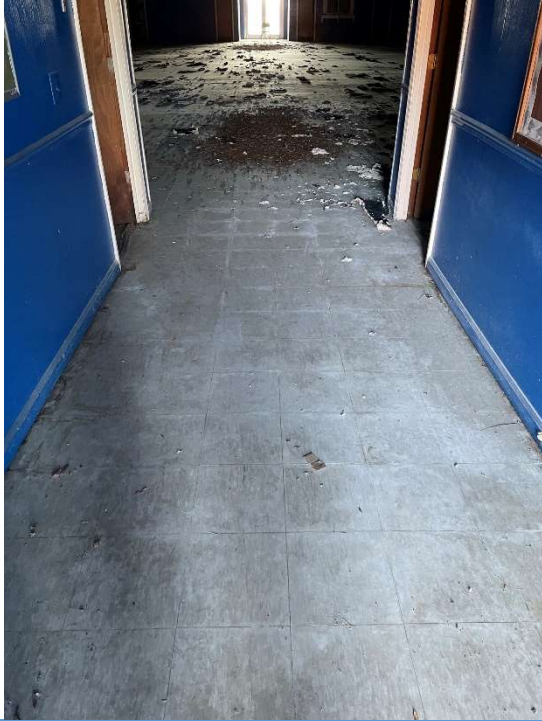
Sincerely,

Dawn Schoolcraft

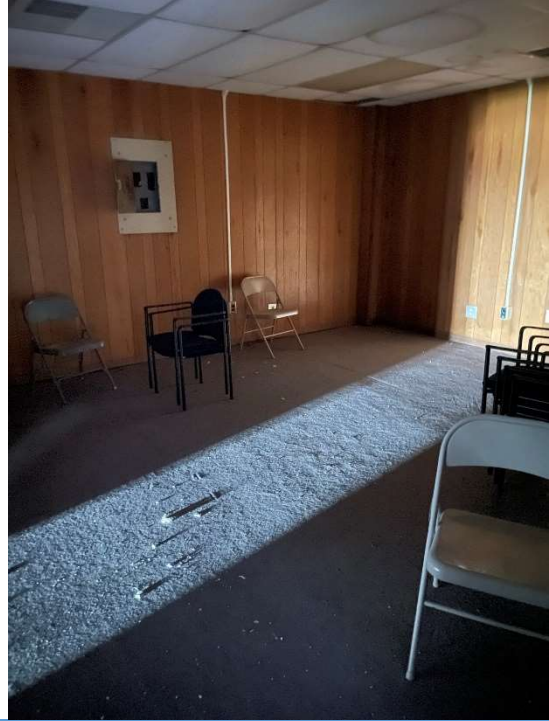
Dawn Schoolcraft
Inspector/Owner

Attachments: Photographs from November 21, 2022
Updated Asbestos Inspection Report Dated May 3, 2017

Interior



Interior



Interior, Gym



Interior, Gym



Interior



Interior



Interior



Interior



Interior



Interior, Bathroom



Interior



Interior

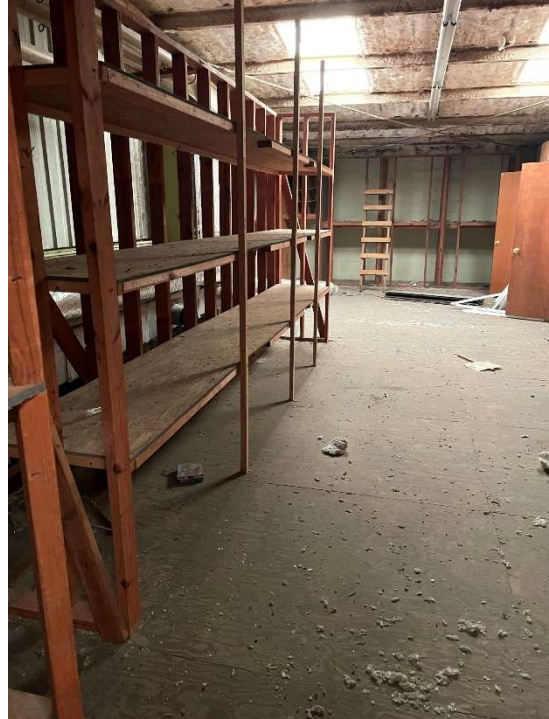


Asbestos Inspection Update
Bobby Alford Center
Project Number – 2022-01-486
November 22, 2022

Interior



Interior



Exterior



Exterior



LIMITED ASBESTOS INSPECTION REPORT
BOBBY ALFORD CENTER AT EAST BAY PARK

Georgetown, South Carolina

Asbestos Inspections, LLC Project # 2017-94

*Performed in general accordance with SCDHEC regulation 61-86.1
along with OSHA regulation 29 CFR 1926*

Assessment Completed by:



Asbestos Inspections, LLC
4686 Pee Dee Highway
Conway, South Carolina 29527
(843) 397-7008

Dawn Schoolcraft
SCDHEC ID# BI-00738

Assessment Completed For:

City of Georgetown
Mr. Orlando Arteaga
2377 Maybank Drive
Georgetown, South Carolina 29442

Inspection Completed On – April 19, 2017

Report Prepared On – May 3, 2017

TABLE OF CONTENTS

1.0 SIGNATURE PAGE..... 3
2.0 COVER LETTER..... 4
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 3.1 Scope and Purpose..... 5
 3.2 Facility Conditions 5
 3.3 Findings and Conclusions 5
4.0 ASBESTOS ASSESSMENT DATA 6
5.0 CONCLUSIONS 8

- Appendix 1** Site Location Plan and Sample Location Plan (Figures 1 and 2)
Appendix 2 Photographs
Appendix 3 Asbestos Laboratory Results

1.0 SIGNATURE PAGE

This report has been performed at the request of Mr. Orlando Arteaga, with The City of Georgetown. The inspection was conducted by Mrs. Dawn Schoolcraft with Asbestos Inspections, LLC on April 19, 2017. The report was prepared and reviewed by the undersigned inspector.

Inspection Performed by:	SCDEHC #	Expires	Signature	Date
Dawn Schoolcraft	BI-00738	1/17/18	<i>Dawn Schoolcraft</i>	4/19/17
Report Prepared by:				
Dawn Schoolcraft	BI-00738	1/17/18	<i>Dawn Schoolcraft</i>	5/3/17
Report Reviewed by:				
Dawn Schoolcraft	BI-00738	1/17/18	<i>Dawn Schoolcraft</i>	5/3/17



2.0 COVER LETTER

May 3, 2017

City of Georgetown
Mr. Orlando Arteaga
2377 Maybank Drive
Georgetown, South Carolina 29442

Subject: Limited Asbestos Inspection Report
Bobby Alford Center at East Bay Park
Georgetown, South Carolina
Asbestos Inspections, LLC Project # 2017-94

Dear Mr. Arteaga:

Asbestos Inspections, LLC has completed a Limited Asbestos Inspection for the Bobby Alford Center located at 311 Greenwich Drive, in Georgetown, South Carolina. The inspection was completed on April 19, 2017 by a South Carolina Department of Health and Environmental Control (SCDHEC) building inspector.

The following report summarizes the project background, assessment procedures, results, and conclusions. The results presented in this report are indicative of conditions during the time of the inspection and of the specific areas outlined. The information provided in this report should not be used as a bidding document and field conditions should be verified. Should suspect building materials, not included within this report, be identified or impacted during the destructive activities, bulk samples must be collected and analyzed for asbestos content.

I appreciate this opportunity to provide my services. Should you have any questions concerning this report, please contact me at (843) 397-7008 or (843) 995-5197.

Sincerely,

Dawn Schoolcraft

Dawn Schoolcraft
Asbestos Building Inspector (SCDHEC #BI-00738)

3.0 EXECUTIVE SUMMARY

3.1 Scope and Purpose

Mr. Orlando Arteaga with The City of Georgetown, requested this assessment for the Bobby Alford Center located at 311 Greenwich Drive, in Georgetown, South Carolina. Based on information provided, the subject structure is scheduled for potential renovations. The purpose of this assessment is to identify asbestos containing materials (ACMs) prior to the scheduled activities.

The inspection was completed in accordance with procedures specified in SCDHEC regulation 61.86.1 along with Occupational Safety and Health Administration (OSHA) regulation 29 Code of the Federal Regulations (CFR) 1926. The representative bulk samples collected were analyzed by a National Voluntary Laboratory Accreditation Program (NVLAP) certified laboratory which is administered by the National Institute of Standards and Technology (NIST). This report has been prepared in accordance with Environmental Protection Agency (EPA) 40 CFR, 763.85(a)(4).

3.2 Facility Conditions

The building formerly operated as a recreational center with a basketball court, office space, storage, and restrooms. The subject structure consists of an approximately 7,200 vacant building, constructed on a slab-on-grade foundation, with a pitched sheet metal roof. The exterior consists of a brick façade on the front of the building with concrete block for the remaining walls. The interior consists of multiple vinyl floor coverings, carpet in the office areas, block walls, sheetrock walls, wood paneled walls, suspended ceiling tile, with ceiling insulation throughout. Samples were collected for the interior and roof of the structure.

The possibility exists that suspect materials were undetected in inaccessible areas such as areas deemed unsafe to enter, locked rooms, behind exterior veneer, pipe chases, or wall voids. If additional suspect materials not included in this report are discovered during renovation, bulk samples should be collected and analyzed for asbestos content.

3.3 Findings and Conclusions

The EPA and SCDHEC define materials as asbestos containing if an asbestos content >1% is identified in a representative sample. **Asbestos >1% was detected** in the following materials sampled and analyzed:

- F1 – Black mastic associated with non-asbestos containing light gray 12”x12” floor tile throughout the main portion of the building and under carpet in the front office areas (approximately 6,200 sf).
- F2 – Black mastic associated with non-asbestos containing white 12”x12” floor tile at front door (approximately 20 sf).
- F3 – Beige 9”x9” floor tile with associated black mastic in rear office areas under carpet (approximately 1,000 sf).

No asbestos >1% was detected in the remaining samples collected and analyzed.

Should the above identified ACMs be disturbed, it should be removed by a licensed abatement contractor prior to any disturbance. A copy of this report along with an application for abatement and demolition must be submitted to SCDHEC 10 working days prior to any abatement activities. Additionally, a copy of this report should be provided to the contractors to assist with compliance with applicable State and Federal regulations.

4.0 ASBESTOS ASSESSMENT DATA

The assessment was performed by observing and sampling suspect ACMs in the structure prior to the scheduled demolition. Representative bulk samples were then extracted, recorded on a chain of custody, and submitted to CEI Labs of Cary, North Carolina for laboratory analysis. The samples were tested via Polarized Light Microscopy (PLM); however, SCDHEC requires a Transmission Electron Microscopy (TEM) test be performed for all non-friable organically bound material found negative via PLM.

The following table exhibits the suspect material sampled, location, quantity of material sampled, condition of material, potential for future disturbance, laboratory test method, and laboratory result for each sample collected.

Sample #	Material	Location	Cat./# Samples	Qty.	Asbestos Type	%	Cond.	Pot. Dist.	Haz. Assess.	Test Method	
R-01	Roof Coating - Silver	Roof	M/3	7,200 sf	ND	0	G/NF	PSD	3	PLM	
R-02	Roof Coating – Silver				ND	0	G/NF	PSD	3	PLM	
R-03	Roof Coating - Silver				ND	0	G/NF	PSD	3	TEM	
F1-01	Floor Tile – Light Gray 12”x12”	Main Area	M/3	1,000 sf	ND	0	G/NF	PSD	3	PLM	
	Mastic - Black				Chrysotile	5	G/NF	PSD	3	PLM	
F1-02	Floor Tile – Light Gray 12”x12”				--	--	--	--	--	--	--
	Mastic - Black				--	--	--	--	--	--	--
F1-03	Floor Tile – Light Gray 12”x12”				--	--	--	--	--	--	--
	Mastic - Black				--	--	--	--	--	--	--
F2-01	Floor Tile – White 12”x12”	Front Door	M/3	20 sf	ND	0	G/NF	PSD	3	PLM	
	Mastic – Tan/Black				Chrysotile	3	G/NF	PSD	3	PLM	
F2-02	Floor Tile – White 12”x12”				--	--	--	--	--	--	--
	Mastic – Tan/Black				--	--	--	--	--	--	--
F2-03	Floor Tile – White 12”x12”				--	--	--	--	--	--	--
	Mastic – Tan/Black				--	--	--	--	--	--	--
F3-01	Carpet Mastic – Tan	Offices	M/3	1,000 sf	ND	0	G/NF	PSD	3	PLM	
	Floor Tile – Beige 9”x9”				Chrysotile	7	G/NF	PSD	3	PLM	
	Mastic – Black				Chrysotile	5	G/NF	PSD	3	PLM	
F3-02	Carpet Mastic – Tan				--	--	--	--	--	--	--
	Floor Tile – Beige 9”x9”				--	--	--	--	--	--	--
	Mastic – Black				--	--	--	--	--	--	--
F3-03	Carpet Mastic – Tan				--	--	--	--	--	--	--
	Floor Tile – Beige 9”x9”				--	--	--	--	--	--	--
	Mastic – Black				--	--	--	--	--	--	--

Limited Asbestos Inspection Report
BOBBY ALFORD CENTER AT EAST BAY PARK
Project Number – 2017-94
May 3, 2017

Sample #	Material	Location	Cat./# Samples	Qty.	Asbestos Type	%	Cond.	Pot. Dist.	Haz. Assess.	Test Method
CT1-01	Ceiling Tile – White/Beige	Office Areas	M/3	1,000 sf	ND	0	G/F	PSD	3	PLM
CT1-02	Ceiling Tile – White/Beige				ND	0	G/F	PSD	3	PLM
CT1-03	Ceiling Tile – White/Beige				ND	0	G/F	PSD	3	PLM
SR1-01	Sheetrock – White	Office Walls	S/5	2,000 sf	ND	0	G/F	PSD	3	PLM
	Joint Compound - White				ND	0	G/F	PSD	3	PLM
SR1-02	Sheetrock – White				ND	0	G/F	PSD	3	PLM
	Joint Compound - White				ND	0	G/F	PSD	3	PLM
SR1-03	Sheetrock – White				ND	0	G/F	PSD	3	PLM
	Joint Compound - White				ND	0	G/F	PSD	3	PLM
SR1-04	Sheetrock – White				ND	0	G/F	PSD	3	PLM
	Joint Compound - White				ND	0	G/F	PSD	3	PLM
SR1-05	Sheetrock – White				ND	0	G/F	PSD	3	PLM
	Joint Compound - White				ND	0	G/F	PSD	3	PLM
C1-01	Ceiling Insulation - Black	Ceiling Throughout	S/7	7,200 sf	ND	0	G/F	PSD	3	PLM
C1-02	Ceiling Insulation – Black				ND	0	G/F	PSD	3	PLM
	Ceiling Insulation - White				ND	0	G/F	PSD	3	PLM
C1-03	Ceiling Insulation – Black				ND	0	G/F	PSD	3	PLM
	Ceiling Insulation - White				ND	0	G/F	PSD	3	PLM
C1-04	Ceiling Insulation – Black				ND	0	G/F	PSD	3	PLM
C1-05	Ceiling Insulation – Black				ND	0	G/F	PSD	3	PLM
C1-06	Ceiling Insulation – Black				ND	0	G/F	PSD	3	PLM
	Ceiling Insulation - White				ND	0	G/F	PSD	3	PLM
C1-07	Ceiling Insulation - Black				ND	0	G/F	PSD	3	PLM
	Ceiling Insulation - White	ND	0	G/F	PSD	3	PLM			
DM-01	Duct Mastic - White	HVAC Duct	TSI/3	25 sf	ND	0	G/NF	PSD	3	PLM
DM-02	Duct Mastic – White				ND	0	G/NF	PSD	3	PLM
	Duct Mastic – Gray				ND	0	G/NF	PSD	3	PLM
DM-03	Duct Mastic - White				ND	0	G/NF	PSD	3	TEM
WC-01	Wall Covering – White/Green	Block Walls (Paint)	M/3	7,200 sf	ND	0	G/F	PSD	3	PLM
WC-02	Wall Covering – Black/Green				ND	0	G/F	PSD	3	PLM
WC-03	Wall Covering – Black/Green				ND	0	G/F	PSD	3	PLM
VCB-01	Vinyl Cove Base Mastic - Brown	Storage Room	M/3	50 lf	ND	0	G/NF	PSD	3	PLM
VCB-02	Vinyl Cove Base Mastic – Brown				ND	0	G/NF	PSD	3	PLM

Sample #	Material	Location	Cat./# Samples	Qty.	Asbestos Type	%	Cond.	Pot. Dist.	Haz. Assess.	Test Method
VCB-03	Vinyl Cove Base Mastic - Brown				Chrysotile	<1	G/NF	PSD	3	TEM

Abbreviations and Hazard Assessment Key

<u>Category and Sampling #'s</u>		
Miscellaneous (M) = 3 samples required		
Surfacing (S) = <1,000 sf = 3 samples required; 1,000-5,000 sf = 5 samples; >5,000 sf = 7 samples		
Thermal System Insulation (TSI) = < 6 sf = 1 sample required; > 6 sf = 3 samples		
<u>Present Condition</u>		
F = Friable G = Good (very localized limited damage)		
NF = Non-friable D = Damaged (Damage of less than 10% distributed and less than 25% localized)		
SD = Significantly Damaged (Damage equal to or greater than 10% distributed/25% localized)		
<u>Potential for Future Disturbance</u>		
LPD = Low potential for disturbance (Contact, vibration, and air erosion all of low concern)		
PD = Potential for damage (Contact, vibration, or air erosion of moderate concern)		
PSD = Potential for significant damage (Contact, vibration, or air erosion of high concern)		
<u>Hazard Assessment – Present Condition Versus Potential for Future Disturbance</u>		
<i>Good</i>	<i>Damaged</i>	<i>Significantly Damaged = 7</i>
LPD = 1	LPD = 4	
PD = 2	PD = 5	
PSD = 3	PSD = 6	
<u>Test Method</u>		
PLM = Polarized Light Microscopy		
TEM = Transmission Electron Microscopy (required by SCDHEC for confirmation of negative results for non-friable organically bound materials)		
-- = Sample not analyzed due to positive PLM results.		
<u>Misc.</u>		
sf = Square Feet lf = Linear Feet		
ND = None Detected		
EPA, SCDHEC, and OSHA define a material as asbestos containing if an asbestos content greater than 1% is detected.		

Please understand that quantities are estimated and should not be used for bidding purposes. Field conditions should be verified prior to bidding.

Site location and sample locations are identified as Figures 1 and 2 of Appendix 1 of this report, photographs are in Appendix 2, and laboratory results are in Appendix 3.

5.0 CONCLUSIONS

The EPA and SCDHEC define materials as asbestos containing if an asbestos content >1% is detected in a representative sample. **Asbestos >1 % was detected** in the following materials sampled and analyzed for the Bobby Alford Center located at 311 Greenwich Drive, in Georgetown, South Carolina:

- F1 – Black mastic associated with non-asbestos containing light gray 12”x12” floor tile throughout the main portion of the building and under carpet in the front office areas (approximately 6,200 sf).
- F2 – Black mastic associated with non-asbestos containing white 12”x12” floor tile at front door (approximately 20 sf).
- F3 – Beige 9”x9” floor tile with associated black mastic in rear office areas under carpet (approximately 1,000 sf).

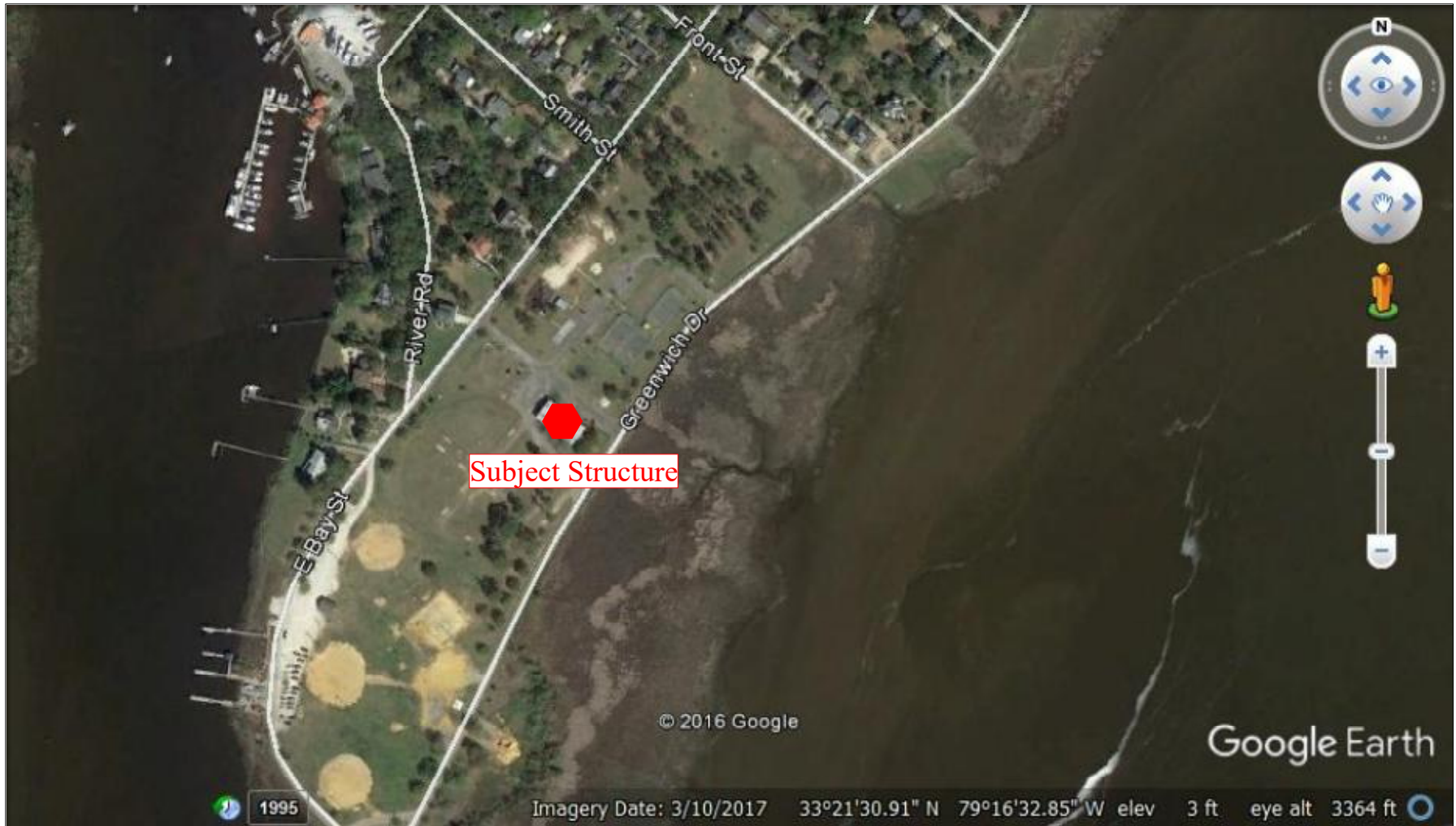
No asbestos >1% was detected in the remaining samples collected and analyzed.

Should the above identified ACMs be disturbed, it should be removed by a licensed abatement contractor prior to any disturbance. A copy of this report along with an application for abatement and demolition must be submitted to SCDHEC 10 working days prior to any abatement activities. Additionally, a copy of this report should be provided to the contractors to assist with compliance with applicable State and Federal regulations.

The possibility exists that suspect materials were undetected in inaccessible areas such as areas deemed unsafe to enter, locked rooms, behind exterior veneer, pipe chases, below the wood roof decking, or wall voids. If additional suspect materials not included in this report are discovered during demolition, bulk samples should be collected and analyzed for asbestos content.

APPENDIX 1

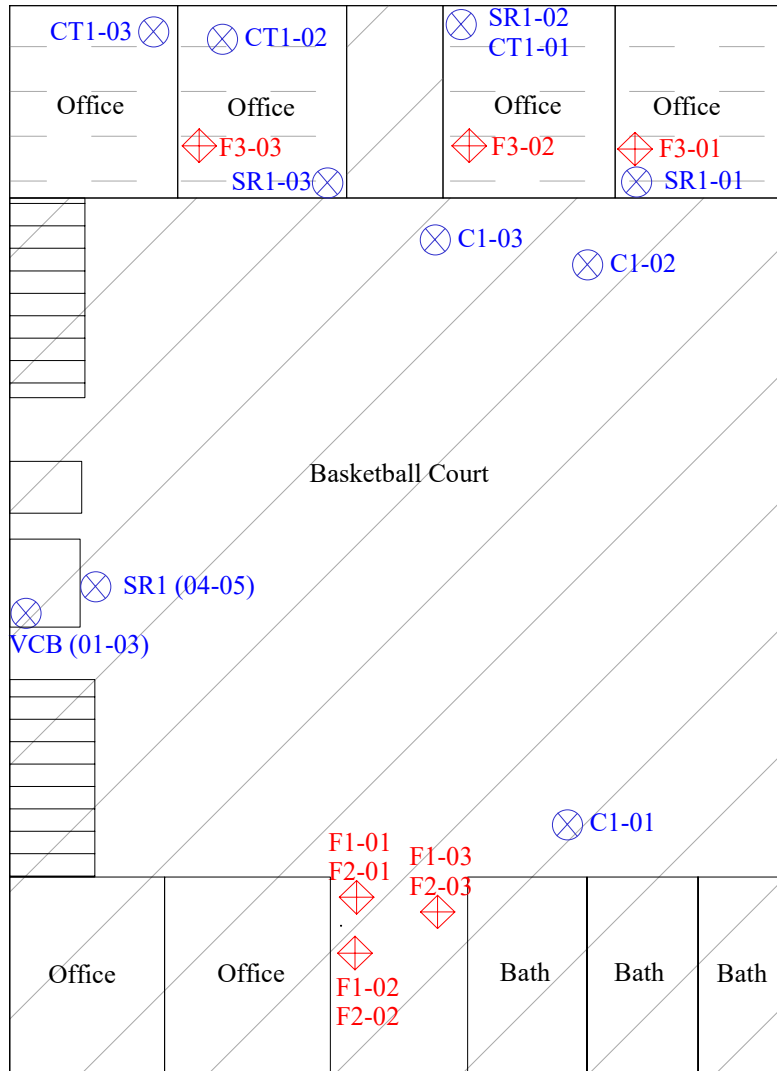
Site Location Plan and Sample Location Plan (Figures 1 and 2)



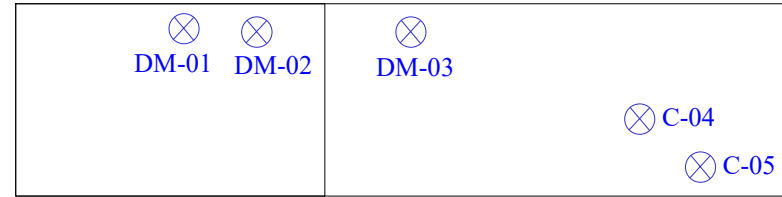
Site Location Plan
Bobby Alford Center
Georgetown, SC
Project # - 2017-94

Scale: Not to Scale
Reviewed By: DS
Date: 5/2/17
Source: Google Earth

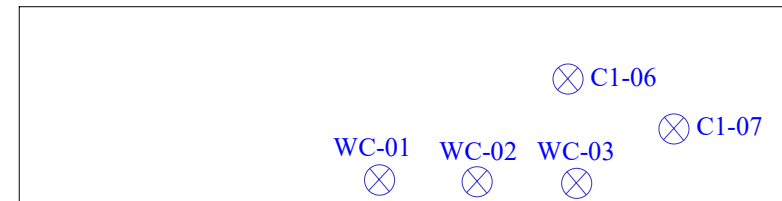
Figure 1



2nd Floor Above Rear Offices



2nd Floor Above Front Portion of Bldg.



LEGEND

- ⊗ Sample Location
- ⊠ Asbestos Containing Sample Location
- ▨ Asbestos containing mastic associated with non-asbestos containing floor tile underlying carpet in the front offices (Approx. 6,220 sf total)
- ▤ Asbestos containing floor tile and mastic underlying carpet (approx. 1,000 sf)



Asbestos Sample Location Plan
 Bobby Alford Center
 East Bay Park
 Georgetown, SC
 Project # - 2017-94

Scale: Not to Scale
 Reviewed By: DS
 Date: 5/3/17
 Source: N/A

Figure 2

APPENDIX 2

Photographs

Limited Asbestos Inspection Report
BOBBY ALFORD CENTER
Project Number – 2017-94
May 2, 2017



Front of building



Roof

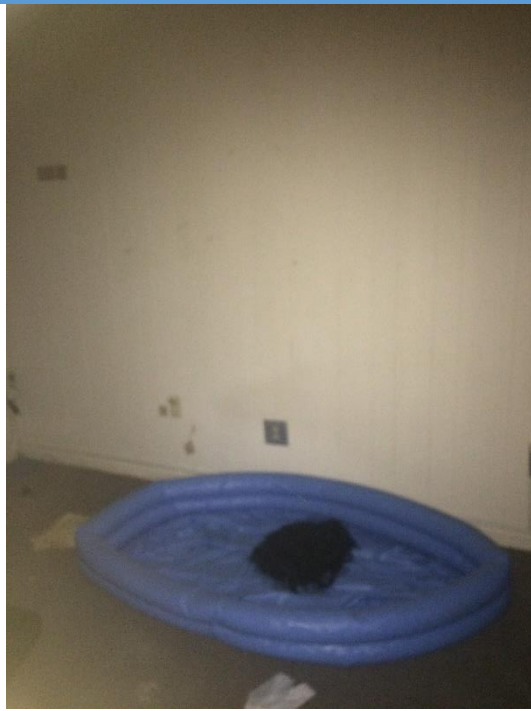


Interior view of main portion of building
(basket ball court)



Bathroom

Limited Asbestos Inspection Report
BOBBY ALFORD CENTER
Project Number – 2017-94
May 2, 2017



Typical office area



Floor tile under carpet in office areas



2nd floor above offices



HVAC duct on 2nd floor

APPENDIX 3

Asbestos Laboratory Results



April 26, 2017

Asbestos Inspections LLC
4686 Peedee Hwy
Conway, SC 29527

CLIENT PROJECT: Bobby Alford Center
CEI LAB CODE: B17-0568

Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on April 20, 2017. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600 Method.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% asbestos by weight as determined by visual estimation.

Thank you for your business and we look forward to continuing good relations. If you have any questions, please feel free to call our office at 919-481-1413.

Kind Regards,

A handwritten signature in black ink, appearing to read "Tianbao Bai".

Tianbao Bai, Ph.D., CIH
Laboratory Director





ASBESTOS ANALYTICAL REPORT
By: Polarized Light Microscopy

Prepared for

Asbestos Inspections LLC

CLIENT PROJECT: Bobby Alford Center

CEI LAB CODE: B17-0568

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 04/26/17

TOTAL SAMPLES ANALYZED: 27

SAMPLES >1% ASBESTOS: 4

TEL: 866-481-1412

www.ceilabs.com



Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: Bobby Alford Center

CEI LAB CODE: B17-0568

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
R-01		B237529	Silver	Roof Coating	None Detected
R-02		B237530	Silver	Roof Coating	None Detected
R-03		B237531		Sample Submitted for TEM Analysis	
F1-01		B237532A	Light Gray	Floor Tile	None Detected
		B237532B	Black	Mastic	Chrysotile 5%
F1-02		B237533		Sample Not Analyzed per COC	
F1-03		B237534		Sample Not Analyzed per COC	
F2-01		B237535A	White	Floor Tile	None Detected
		B237535B	Tan/Black	Mastic	Chrysotile 3%
F2-02		B237536		Sample Not Analyzed per COC	
F2-03		B237537		Sample Not Analyzed per COC	
F3-01	Layer 1	B237538A	Tan	Mastic	None Detected
	Layer 2	B237538A	Beige	Floor Tile	Chrysotile 7%
		B237538B	Black	Mastic	Chrysotile 5%
F3-02		B237539		Sample Not Analyzed per COC	
F3-03		B237540		Sample Not Analyzed per COC	
CT1-01		B237541	White/Beige	Ceiling Tile	None Detected
CT1-02		B237542	White/Beige	Ceiling Tile	None Detected
CT1-03		B237543	White/Beige	Ceiling Tile	None Detected
SR1-01	Layer 1	B237544	White	Sheetrock	None Detected
	Layer 2	B237544	White	Joint Compound	None Detected
SR1-02	Layer 1	B237545	White	Sheetrock	None Detected
	Layer 2	B237545	White	Joint Compound	None Detected
SR1-03	Layer 1	B237546	White	Sheetrock	None Detected
	Layer 2	B237546	White	Joint Compound	None Detected
SR1-04	Layer 1	B237547	White	Sheetrock	None Detected
	Layer 2	B237547	White	Joint Compound	None Detected
SR1-05	Layer 1	B237548	White	Sheetrock	None Detected
	Layer 2	B237548	White	Joint Compound	None Detected
C1-01	Layer 1	B237549	Black	Ceiling Insulation	None Detected



Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: Bobby Alford Center

CEI LAB CODE: B17-0568

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
	Layer 2	B237549	White	Ceiling Insulation	None Detected
C1-02	Layer 1	B237550	Black	Ceiling Insulation	None Detected
	Layer 2	B237550	White	Ceiling Insulation	None Detected
C1-03	Layer 1	B237551	Black	Ceiling Insulation	None Detected
	Layer 2	B237551	White	Ceiling Insulation	None Detected
C-04		B237552	White	Ceiling Insulation	None Detected
C-05		B237553	White	Ceiling Insulation	None Detected
C1-06	Layer 1	B237554	Black	Ceiling Insulation	None Detected
	Layer 2	B237554	White	Ceiling Insulation	None Detected
C1-07	Layer 1	B237555	Black	Ceiling Insulation	None Detected
	Layer 2	B237555	White	Ceiling Insulation	None Detected
DM-01		B237556	White	Duct Mastic	None Detected
DM-02	Layer 1	B237557	White	Duct Mastic	None Detected
	Layer 2	B237557	Gray	Duct Mastic	None Detected
DM-03		B237558		Sample Submitted for TEM Analysis	
WC-01		B237559	White/Green	Wall Covering (Texture)	None Detected
WC-02		B237560	Black/Green	Wall Covering (Texture)	None Detected
WC-03		B237561	Black/Green	Wall Covering (Texture)	None Detected
VCB-01		B237562	Brown	Vinyl Cove Base Adhesive	None Detected
VCB-02		B237563	Brown	Vinyl Cove Base Adhesive	None Detected
VCB-03		B237564		Sample Submitted for TEM Analysis	



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Asbestos Inspections LLC
 4686 Peedee Hwy
 Conway, SC 29527

CEI Lab Code: B17-0568
Date Received: 04-20-17
Date Analyzed: 04-24-17
Date Reported: 04-26-17

Project: Bobby Alford Center

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous	Cellulose	Non-Fibrous	Binder	
R-01 B237529	Roof Coating	Homogeneous Silver Fibrous Bound	2%	Cellulose	98%	Binder	None Detected
R-02 B237530	Roof Coating	Homogeneous Silver Fibrous Bound	2%	Cellulose	98%	Binder	None Detected
R-03 B237531	Sample Submitted for TEM Analysis						
F1-01 B237532A	Floor Tile	Homogeneous Light Gray Fibrous Bound	2%	Cellulose	60%	Vinyl Calc Carb	None Detected
B237532B	Mastic	Homogeneous Black Fibrous Bound	2%	Cellulose	60%	Mastic 33% Calc Carb	5% Chrysotile
F1-02 B237533	Sample Not Analyzed per COC						
F1-03 B237534	Sample Not Analyzed per COC						
F2-01 B237535A	Floor Tile	Homogeneous White Fibrous Bound	2%	Cellulose	60%	Vinyl 38% Calc Carb	None Detected



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Asbestos Inspections LLC
 4686 Peedee Hwy
 Conway, SC 29527

CEI Lab Code: B17-0568
Date Received: 04-20-17
Date Analyzed: 04-24-17
Date Reported: 04-26-17

Project: Bobby Alford Center

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
B237535B	Mastic	Homogeneous Tan/Black Fibrous Bound	2%	Cellulose	60%	Mastic 35% Calc Carb	3% Chrysotile
Lab Notes: Unable to separate Tan & Black Mastic.							
F2-02 B237536	Sample Not Analyzed per COC						
F2-03 B237537	Sample Not Analyzed per COC						
F3-01 Layer 1 B237538A	Mastic	Homogeneous Tan Fibrous Bound	2%	Cellulose	60%	Mastic 38% Calc Carb	None Detected
Layer 2 B237538A	Floor Tile	Homogeneous Beige Fibrous Bound	2%	Cellulose	60%	Vinyl 31% Calc Carb	7% Chrysotile
B237538B	Mastic	Homogeneous Black Fibrous Bound	2%	Cellulose	60%	Mastic 33% Calc Carb	5% Chrysotile
F3-02 B237539	Sample Not Analyzed per COC						
F3-03 B237540	Sample Not Analyzed per COC						
CT1-01 B237541	Ceiling Tile	Heterogeneous White/Beige Fibrous Loosely Bound	73% 2%	Cellulose Fiberglass	5% 20%	Paint Perlite	None Detected



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Asbestos Inspections LLC
 4686 Peedee Hwy
 Conway, SC 29527

CEI Lab Code: B17-0568
Date Received: 04-20-17
Date Analyzed: 04-24-17
Date Reported: 04-26-17

Project: Bobby Alford Center

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
CT1-02 B237542	Ceiling Tile	Heterogeneous White/Beige Fibrous Loosely Bound	73%	Cellulose	5%	Paint	None Detected
			2%	Fiberglass	20%	Perlite	
CT1-03 B237543	Ceiling Tile	Heterogeneous White/Beige Fibrous Loosely Bound	73%	Cellulose	5%	Paint	None Detected
			2%	Fiberglass	20%	Perlite	
SR1-01 Layer 1 B237544	Sheetrock	Heterogeneous White Fibrous Bound	15%	Cellulose	85%	Gypsum	None Detected
Layer 2 B237544	Joint Compound	Heterogeneous White Fibrous Bound	2%	Cellulose	13%	Paint	None Detected
					85%	Calc Carb	
SR1-02 Layer 1 B237545	Sheetrock	Heterogeneous White Fibrous Bound	15%	Cellulose	85%	Gypsum	None Detected
Layer 2 B237545	Joint Compound	Heterogeneous White Fibrous Bound	2%	Cellulose	13%	Paint	None Detected
					85%	Calc Carb	
SR1-03 Layer 1 B237546	Sheetrock	Heterogeneous White Fibrous Bound	15%	Cellulose	85%	Gypsum	None Detected



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Asbestos Inspections LLC
 4686 Peedee Hwy
 Conway, SC 29527

CEI Lab Code: B17-0568
Date Received: 04-20-17
Date Analyzed: 04-24-17
Date Reported: 04-26-17

Project: Bobby Alford Center

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
Layer 2 B237546	Joint Compound	Heterogeneous White Fibrous Bound	2%	Cellulose	13%	Paint Calc Carb	None Detected
SR1-04 Layer 1 B237547	Sheetrock	Heterogeneous White Fibrous Bound	15%	Cellulose	85%	Gypsum	None Detected
Layer 2 B237547	Joint Compound	Heterogeneous White Fibrous Bound	2%	Cellulose	13%	Paint Calc Carb	None Detected
SR1-05 Layer 1 B237548	Sheetrock	Heterogeneous White Fibrous Bound	15%	Cellulose	85%	Gypsum	None Detected
Layer 2 B237548	Joint Compound	Heterogeneous White Fibrous Bound	2%	Cellulose	13%	Paint Calc Carb	None Detected
C1-01 Layer 1 B237549	Ceiling Insulation	Homogeneous Black Fibrous Bound	8% 2%	Cellulose Talc	90%	Binder	None Detected
Layer 2 B237549	Ceiling Insulation	Heterogeneous White Fibrous Bound	85%	Cellulose	15%	Foam	None Detected



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Asbestos Inspections LLC
 4686 Peedee Hwy
 Conway, SC 29527

CEI Lab Code: B17-0568
Date Received: 04-20-17
Date Analyzed: 04-24-17
Date Reported: 04-26-17

Project: Bobby Alford Center

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
C1-02 Layer 1 B237550	Ceiling Insulation	Homogeneous	8%	Cellulose	90%	Binder	None Detected
		Black Fibrous Bound	2%	Talc			
Layer 2 B237550	Ceiling Insulation	Heterogeneous	85%	Cellulose	15%	Foam	None Detected
		White Fibrous Loosely Bound					
C1-03 Layer 1 B237551	Ceiling Insulation	Homogeneous	8%	Cellulose	90%	Binder	None Detected
		Black Fibrous Bound	2%	Talc			
Layer 2 B237551	Ceiling Insulation	Heterogeneous	85%	Cellulose	15%	Foam	None Detected
		White Fibrous Loosely Bound					
C-04 B237552	Ceiling Insulation	Heterogeneous	85%	Cellulose	15%	Foam	None Detected
		White Fibrous Loosely Bound					
C-05 B237553	Ceiling Insulation	Heterogeneous	85%	Cellulose	15%	Foam	None Detected
		White Fibrous Loosely Bound					
C1-06 Layer 1 B237554	Ceiling Insulation	Homogeneous	8%	Cellulose	90%	Binder	None Detected
		Black Fibrous Bound	2%	Talc			



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Asbestos Inspections LLC
 4686 Peedee Hwy
 Conway, SC 29527

CEI Lab Code: B17-0568
Date Received: 04-20-17
Date Analyzed: 04-24-17
Date Reported: 04-26-17

Project: Bobby Alford Center

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
Layer 2 B237554	Ceiling Insulation	Heterogeneous White Fibrous Loosely Bound	85%	Cellulose	15%	Foam	None Detected
C1-07 Layer 1 B237555	Ceiling Insulation	Homogeneous Black Fibrous Bound	8% 2%	Cellulose Talc	90%	Binder	None Detected
Layer 2 B237555	Ceiling Insulation	Heterogeneous White Fibrous Loosely Bound	85%	Cellulose	15%	Foam	None Detected
DM-01 B237556	Duct Mastic	Homogeneous White Fibrous Bound	2%	Cellulose	60% 38%	Mastic Calc Carb	None Detected
DM-02 Layer 1 B237557	Duct Mastic	Homogeneous White Fibrous Bound	2%	Cellulose	60% 38%	Mastic Calc Carb	None Detected
Layer 2 B237557	Duct Mastic	Homogeneous Gray Fibrous Bound	2%	Cellulose	60% 38%	Mastic Calc Carb	None Detected
DM-03 B237558	Sample Submitted for TEM Analysis						
WC-01 B237559	Wall Covering (Texture)	Heterogeneous White/Green Fibrous Bound	2%	Cellulose	13% 85%	Paint Binder	None Detected



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Asbestos Inspections LLC
 4686 Peedee Hwy
 Conway, SC 29527

CEI Lab Code: B17-0568
Date Received: 04-20-17
Date Analyzed: 04-24-17
Date Reported: 04-26-17

Project: Bobby Alford Center

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
WC-02 B237560	Wall Covering (Texture)	Heterogeneous Black/Green Fibrous Bound	2%	Cellulose	13%	Paint Binder	None Detected
WC-03 B237561	Wall Covering (Texture)	Heterogeneous Black/Green Fibrous Bound	2%	Cellulose	13%	Paint Binder	None Detected
VCB-01 B237562	Vinyl Cove Base Adhesive	Heterogeneous Brown Fibrous Bound	2%	Cellulose	60% 38%	Binder Calc Carb	None Detected
VCB-02 B237563	Vinyl Cove Base Adhesive	Heterogeneous Brown Fibrous Bound	2%	Cellulose	60% 38%	Binder Calc Carb	None Detected
VCB-03 B237564	Sample Submitted for TEM Analysis						



LEGEND: Non-Anth = Non-Asbestiform Anthophyllite
Non-Trem = Non-Asbestiform Tremolite
Calc Carb = Calcium Carbonate

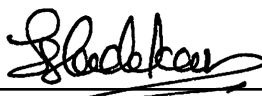
METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

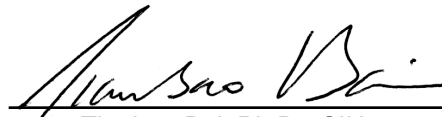
REPORTING LIMIT: <1% by visual estimation

REGULATORY LIMIT: >1% by weight

Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. Estimated measurement of uncertainty is available on request.

This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by CEI Labs, Inc. CEI Labs makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. Samples were received in acceptable condition unless otherwise noted. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

ANALYST: 
Shilpa Ladekar

APPROVED BY: 
Tianbao Bai, Ph.D., CIH
Laboratory Director





730 SE Maynard Road, Cary, NC 27511
 Tel: 866-481-1412; Fax: 919-481-1442

B17-0508
~~B17-0508~~
 B237524
 B237564

ASBESTOS CHAIN OF CUSTODY

LAB USE ONLY:
CEI Lab Code:
CEI Lab I.D. Range:

COMPANY INFORMATION	PROJECT INFORMATION
CEI CLIENT #:	Job Contact: Dawn Schoolcraft
Company: Asbestos Inspections, LLC	Email / Tel: dschoolcraft1978@gmail.com
Address: 4686 Pee Dee Hwy., Conway, SC 29527	Project Name: Bobby Alford Center
	Project ID#:
Email: dschoolcraft1978@gmail.com	PO #:
Tel: 843-995-5197 Fax:	STATE SAMPLES COLLECTED IN: SC

IF TAT IS NOT MARKED STANDARD 3 DAY TAT APPLIES.

ASBESTOS	METHOD	TURN AROUND TIME					
		4 HR	8 HR	24 HR	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PLM POINT COUNT (400)	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM POINT COUNT (1000)	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM GRAV w POINT COUNT	EPA 600		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM BULK	CARB 435		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PCM AIR	NIOSH 7400	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	EPA AHERA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	NIOSH 7402	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	ISO 10312	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	ASTM 6281-09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM BULK	CHATFIELD		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
TEM DUST WIPE	ASTM D6480-05	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM DUST MICROVAC	ASTM D5755-09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM SOIL	ASTM D7521-13			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM VERMICULITE	CINCINNATI METHOD			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OTHER:		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

REMARKS / SPECIAL INSTRUCTIONS: Positive stop. Please analyze TEM following negative PLM.		<input checked="" type="checkbox"/> Accept Samples <input type="checkbox"/> Reject Samples	
Relinquished By:	Date/Time	Received By:	Date/Time
Dawn Scholcraft	4/20/17 - 10:20	DH	4-20 9:10

Samples will be disposed of 30 days after analysis



May 1, 2017

Asbestos Inspections LLC
4686 Peedee Hwy
Conway, SC 29527

CLIENT PROJECT: Bobby Alford Center
CEI LAB CODE: T17-0770

Dear Customer:

Enclosed are asbestos analysis results for TEM bulk samples received at our laboratory on April 24, 2017. The samples were analyzed for asbestos using transmission electron microscopy (TEM) per Chatfield Method.

Sample results containing > 1% asbestos are considered asbestos-containing materials (ACMs) per the EPA regulatory requirements. The detection limit for the TEM Chatfield method is <1% depending on the processed weight and constituents of the sample.

Thank you for your business and we look forward to continuing good relations. If you have any questions, please feel free to call our office at 919-481-1413.

Kind Regards,

A handwritten signature in black ink, appearing to read "Tianbao Bai".

Tianbao Bai, Ph.D., CIH
Laboratory Director



ASBESTOS ANALYTICAL REPORT
By: Transmission Electron Microscopy

Prepared for

Asbestos Inspections LLC

CLIENT PROJECT: Bobby Alford Center

CEI LAB CODE: T17-0770

TEST METHOD: Bulk Chatfield
EPA 600 / R93 / 116

REPORT DATE: 05/01/17

TEL: 866-481-1412

www.ceilabs.com



ASBESTOS BULK ANALYSIS

By: TRANSMISSION ELECTRON MICROSCOPY

Client: Asbestos Inspections LLC
4686 Peedee Hwy
Conway, SC 29527

CEI Lab Code: T17-0770
Date Received: 04-24-17
Date Analyzed: 04-25-17
Date Reported: 05-01-17

Project: Bobby Alford Center

TEM BULK CHATFIELD / EPA 600 / R93 / 116

Client ID Lab ID	Material Description	Sample Weight (g)	Organic Material %	Acid Soluble Material %	Acid Insoluble Material %	Asbestos %
R-03 T61553	Silver Roof Coating	0.698	89.3	2.9	7.8	None Detected
DM-03 T61554	White Duct Mastic	0.191	33	64.9	2.1	None Detected
No gray mastic present in the sample submitted for TEM.						
VCB-03 T61555	Brown Vinyl Covebase Adhesive	0.111	41.4	2.7	55.9	<1% Chrysotile



LEGEND: None

METHOD: CHATFIELD & EPA/600/R-93/116

LIMIT OF DETECTION: Varies with the weight and constituents of the sample (<1%)

REGULATORY LIMIT: >1% by weight

This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by CEI Labs, Inc. CEI Labs makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. Estimated measurement of uncertainty is available on request. Samples were received in acceptable condition unless otherwise noted.

ANALYST:


Abigail Nails

APPROVED BY:


Tianbao Bai, Ph.D., CIH
Laboratory Director



730 SE Maynard Road, Cary, NC 27511
 Tel: 866-481-1412; Fax: 919-481-1442

③ T17-0710
 TV1553-555

**ASBESTOS
 CHAIN OF CUSTODY**

DI 1-0300
~~B17-0507~~
 36 B237524
 B23756

LAB USE ONLY:

CEI Lab Code: _____

CEI Lab I.D. Range: _____

COMPANY INFORMATION		PROJECT INFORMATION	
CEI CLIENT #:		Job Contact:	Dawn Schoolcraft
Company:	Asbestos Inspections, LLC	Email / Tel:	dschoolcraft1978@gmail.com
Address:	4686 Pee Dee Hwy., Conway, SC 29527	Project Name:	Bobby Alford Center
		Project ID#:	
Email:	dschoolcraft1978@gmail.com	PO #:	
Tel:	843-995-5197	Fax:	
		STATE SAMPLES COLLECTED IN: SC	

IF TAT IS NOT MARKED STANDARD 3 DAY TAT APPLIES.

ASBESTOS	METHOD	TURN AROUND TIME					
		4 HR	8 HR	24 HR	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PLM POINT COUNT (400)	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM POINT COUNT (1000)	EPA 600	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM GRAV w POINT COUNT	EPA 600	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PLM BULK	CARB 435	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PCM AIR	NIOSH 7400	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	EPA AHERA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	NIOSH 7402	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	ISO 10312	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM AIR	ASTM 6281-09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM BULK	CHATFIELD	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
TEM DUST WIPE	ASTM D6480-05	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM DUST MICROVAC	ASTM D5755-09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM SOIL	ASTM D7521-13	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEM VERMICULITE	CINCINNATI METHOD	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OTHER:		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

REMARKS / SPECIAL INSTRUCTIONS: Positive stop. Please analyze TEM following negative PLM.

Accept Samples
 Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
Dawn Scholcraft	4/20/17 - 10:20	DH	4-20 9:10
<i>[Signature]</i>	04/24/17 12:05 pm		

Samples will be disposed of 30 days after analysis

T17-0770

Re: TEM Project Bobby Alford Center - Insufficient Duct Mastic

From: Dawn Schoolcraft
Sent: Mon, Apr 24, 2017 at 2:50 pm
To: danielle@ceilabs.com

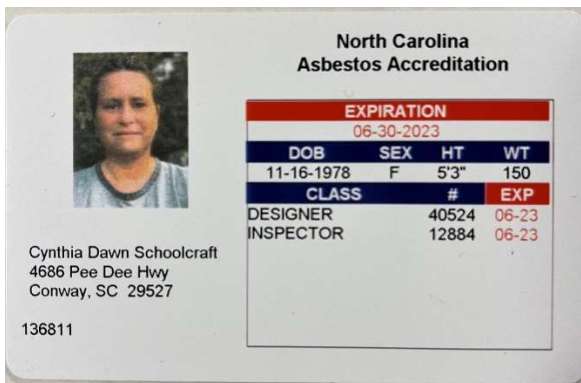
Oh ok that is cool. Please analyze what you can find. Thank you for the heads up on that.

Sent from my iPhone

Asbestos Inspections, LLC
843-995-5197

> On Apr 24, 2017, at 2:37 PM, "danielle@ceilabs.com" <danielle@ceilabs.com> wrote:
>
> There is white duct mastic only on DM-03. DM-02 however, has a white and a gray duct mastic.
>
> Dani Carrier -Lab Technician
> CEI Labs, Inc.
> 730 SE Maynard Road
> Cary, NC 27511
> Phone: (919)481-1413
>
> -----Original Message-----
> From: "Dawn Schoolcraft" <dschoolcraft1978@gmail.com>
> Sent: Monday, April 24, 2017 2:33pm
> To: "danielle@ceilabs.com" <danielle@ceilabs.com>
> Subject: Re: TEM Project Bobby Alford Center - Insufficient Duct Mastic
>
> So there was no mastic on DM-03?
>
> Sent from my iPhone
>
> Asbestos Inspections, LLC
> 843-995-5197
>
>> On Apr 24, 2017, at 2:29 PM, "danielle@ceilabs.com" <danielle@ceilabs.com> wrote:
>>
>> Good Afternoon Dawn,
>>
>> I just wanted to contact you to let you know, for project B17-0568, sample DM-03, contains a gray duct mastic that DM-03 does not. However, we cannot analyze it via TEM anyways, due to insufficient amount of material. I just wanted to let you know so you don't question why your PLM report shows an NOB not analyzed via TEM.
>>
>> If you have any questions, please don't hesitate to give me a call!
>>
>> Thank you for choosing CEI Labs and please let me know if there is anything I can do for you.
>>
>> Best,
>> Dani Carrier -Lab Technician
>> CEI Labs, Inc.
>> 730 SE Maynard Road
>> Cary, NC 27511
>> Phone: (919)481-1413
>>
>>

Licenses



12884, 06/30/2023, North Carolina, Dawn Schoolcraft



American Council for Accredited Certification

hereby certifies that
Cynthia Dawn Schoolcraft
has met all the specific standards and qualifications of the re-certification process,
including continued professional development, and is hereby re-certified as a

CIEC

Council-certified
Indoor Environmental Consultant

This certificate expires on September 30, 2023

Charles F. Wiles
Charles F. Wiles, Executive Director

1909008
Certificate Number

This certificate remains the property of the American Council for Accredited Certification.

1909008, 09/30/2023, South Carolina, Dawn Schoolcraft



LBP-R-1162035-2, 03/16/2024, South Carolina, Dawn Schoolcraft

SCDHEC ISSUED Asbestos ID Card

Dawn Schoolcraft



		Expiration Date:
AIRSAMPLER	AS-00418	06/05/23
CONSULTBI	BI-00738	06/06/23
CONSULTMP	MP-00245	06/06/23
CONSULTPD	PD-00157	06/07/23

BI-00738, 06/06/2023, South Carolina, Dawn Schoolcraft

ASBESTOS ABATEMENT PLAN

BOBBY ALFORD CENTER

Georgetown, South Carolina

Asbestos Inspections, LLC Project # 2022-01-486

Performed in general accordance with SCDHEC Asbestos Regulation 61.86.1

Assessment Completed by:



Asbestos Inspections, LLC
4686 Pee Dee Highway
Conway, South Carolina 29527
(843) 995-5197

Dawn Schoolcraft
SCDHEC Asbestos Designer #PD-00157

Plan Completed For:

Mr. Steve Coe
Rosenblum Coe Architects, Inc.
1643 Means Street
Charleston, South Carolina 29412

Report Prepared On – November 22, 2022



November 22, 2022

Mr. Steve Coe
Rosenblum Coe Architects, Inc.
1643 Means Street
Charleston, South Carolina 29412

Subject: Asbestos Abatement Plan
Bobby Alford Center at East Bay Park
Georgetown, South Carolina
Asbestos Inspections, LLC Project # 2022-01-486

Asbestos Inspections, LLC has completed an Asbestos Abatement Design for the Bobby Alford Center located at 311 Greenwich Drive, in Georgetown, South Carolina. The plan was prepared by a South Carolina Department of Health and Environmental Control (SCDHEC) abatement designer and meets the SCDHEC Asbestos Regulation 61-86.1.

I appreciate this opportunity to provide my services. Should you have any questions concerning this report, please contact me at (843) 995-5197.

Sincerely,

Dawn Schoolcraft

Dawn Schoolcraft
SCDHEC Asbestos Designer #PD-00157
Expiration Date – 6/08/23



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1. INTRODUCTION/GENERAL DESCRIPTION

The work is to consist of the abatement of asbestos containing materials identified by us for the Bobby Alford Center located at 311 Greenwich Drive, in Georgetown, South Carolina. The following plan outlines work practices required by South Carolina Department of Health and Environmental Control (SCDHEC) Asbestos Regulation 61-86.1.

The building formerly operated as a recreational center with a basketball court, office space, storage, and restrooms. The subject structure consists of an approximately 7,200 vacant building, constructed on a slab-on-grade foundation, with a pitched sheet metal roof. The exterior consists of a brick façade on the front of the building with concrete block for the remaining walls. The interior consists of multiple vinyl floor coverings, carpet in the office areas, block walls, sheetrock walls, wood paneled walls, suspended ceiling tile, with ceiling insulation throughout. Samples were collected for the interior and roof of the structure.

2. SCOPE OF WORK

Based on the findings identified by us in the report dated May 3, 2017 and asbestos update dated November 22, 2022, the following outlines the asbestos containing building materials to be removed at this time:

- F1 – Black mastic associated with non-asbestos containing light gray 12”x12” floor tile throughout the main portion of the building and under carpet in the front office areas (approximately 6,200 sf).
- F2 – Black mastic associated with non-asbestos containing white 12”x12” floor tile at front door (approximately 20 sf).
- F3 – Beige 9”x9” floor tile with associated black mastic in rear office areas under carpet (approximately 1,000 sf).

Asbestos air monitoring will be required for friable abatement for the ACMs identified above. It is our understanding that you have contracted a properly licensed asbestos abatement contractor for South Carolina.

2.1 Contractor Information

The scope of work includes the removal and disposal of the above identified ACMs, as identified by us. The following is required as well as other requirements specified elsewhere in this document.

- The Contractor will be responsible for filing proper notification to SCDHEC and must have a current SCDHEC Asbestos Abatement Contractor’s License.
- Should power and water not be readily available at the project site, the Contractor must supply all necessary utility services (electrical, water, etc.) for proper completion of the project. The Contractor shall coordinate the location and availability of utilities through the



Owner. The Contractor shall ensure that all electrical cords are connected to Ground Fault Circuit Interrupter (GFCI) devices. Additionally, hoses and cords not suspended shall be taped to the floor utilizing caution tape in high traffic areas.

- Air filtration devices are required to run continuously during an abatement project. If devices cannot be run overnight the contractor shall apply for a work practice variance with SCDHEC. The work area shall be sealed and locked to prevent access during working and non-working hours.
- All workers performing work at this site must be licensed by SCDHEC with an appropriate asbestos credential. There must also be a licensed asbestos abatement “supervisor” on the job site at all work hours throughout the course of asbestos abatement related work activities.
- Asbestos containing material found to extend from the designated areas into, through, above, or below walls, above ceilings, or other barriers is also included in this specification.
- If hazardous materials, such as chemicals, or other hazardous materials are discovered during the course of the work other than asbestos debris, the Contractor shall cease work in affected area and immediately assess the area. Take appropriate actions to clean and properly dispose of identified waste.
- The Contractor shall assume full responsibility and liability for the compliance with all applicable federal, state and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. It is the abatement Contractor’s responsibility to fulfill all Occupational Safety and Health Administration (OSHA) requirements under CFR 1926.1101 and all other safety requirements that may be required by the work site. The Contractor shall hold the Owner, Architect, and Engineer/Air Monitoring Firm harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulation on the part of himself, his employees, or his subcontractors.
- Contractor must furnish all labor, material, supplies, insurance, tools, equipment, and notifications in accordance with Environmental Protection Agency (EPA), OSHA, State, and all other applicable agencies to complete removal of asbestos containing materials from the structures. It is the Contractors’ responsibility to be aware of and obtain all permits necessary to complete the scope of work.
- During abatement activities, the Contractor shall take appropriate continuous measures, as necessary, to protect the public from the potential hazard of exposure to airborne asbestos.
- The Contractor shall keep the premises and building free from accumulations of waste materials caused by the Contractor’s employees or employees of the subcontractor.



2.2 Submittals

The Abatement Contractor shall secure the necessary permits and certifications for the work in conjunction with asbestos removal, hauling and disposal. All permits and certifications shall be maintained onsite for review. Additionally, the abatement contractor shall submit permits and certifications to the Owner for recordkeeping. Final payment will be held until all submittals are received by the Owner.

- Notification: Notify the Owner's Representative, and SCDHEC Asbestos Section 10 working days prior to the start of asbestos work. Obtain and post the asbestos removal permit onsite. The Contractor shall notify SCDHEC by telephone and follow up in writing as soon as possible, but not later than, the following working day when a project has been canceled. Notification is also required for any changes in work schedule. Submit notification and permit copies to the Owner.
- Hazard Communication Program: The Contractor will submit evidence, if requested, of a written Hazard Communication Program as required by 29 CFR 1910.1200.
- Respirator Program: Establish and implement a respirator program as required by ANSI Z88.2, 29 CFR 1910.134, and 29 CFR 1926.1101.
- Training: Submit to the Owner documentation that the required EPA, OSHA and State training has been conducted.
- Logs: Copy of daily sign in/out log for each regulated asbestos abatement area to include the date, names, and times of each person entering and exiting the regulated area.
- Landfill Receipts: Submit to the Owner all waste manifests from the landfill to include detailed delivery tickets, prepared signed, and dated by an agent of the landfill, certifying the amount of asbestos materials delivered to the landfill.

2.3 Daily Reports

The Contractor shall maintain daily logs and reports of job-site activities and personnel exposure monitoring at the site and shall provide copies to the Owner for review if requested.

- Reporting Unusual Events: When an event of unusual and significant nature occurs at site (examples: failure of pressure differential system, rupture of temporary enclosures, equipment or power failure, high airborne fiber reading), prepare and submit a special report listing chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information.
- Accident Reporting: Notify Consultant verbally if any accident or other medical emergency occurs requiring treatment and/or removal of a worker from the work site.



3. PRODUCTS

3.1 Materials

Encapsulant: Product shall be rated as acceptable for use intended when field tested in accordance with ASTM Proposed Specification P-189 “Specification for Encapsulants for Friable Asbestos Containing Building Materials”. Use only materials that have a flame spread index of 25 or less when dry, when tested in accordance with ASTM E-84.

Impermeable Waste-Disposal Containers: Suitable to receive and retain any asbestos-containing or contaminated material until disposal at an approved site. The containers shall be labeled in accordance with OSHA Regulation 29 CFR 1910.1001 and 29 CFR 1926.1101. Containers must be both water-tight and air-tight.

Plastic Sheeting: Polyethylene plastic sheeting material typically 6-mil thickness for covering floors and walls, providing air locks, and sealing doors and windows; supply in appropriate widths to minimize seams.

Surfactant (Wetting Agent): 50% polyoxyethylene ester and 50% polyoxyethylene ether, or approved equal, shall be mixed with water to provide a concentration of 2 ml surfactant to 1 liters of water, or manufacturer's recommended concentration.

Tape: Glass fiber or other tape capable of sealing joints of adjacent sheets of plastic sheeting and for attachment of plastic sheets to finished or unfinished surfaces of dissimilar materials under both dry and wet conditions, including use of amended water.

Caution Signs, Tape, and Labels: Provide caution signs printed in English and Spanish at all entrances to the Regulated Area. Barrier tape must be used to establish the Regulated Area. Delineate the area with 3-inch wide polyethylene ribbon printed with the warning “CAUTION ASBESTOS REMOVAL”. Provide caution labels printed in English. Affix labels to asbestos materials, scrap, waste, debris, sealed impermeable bags, asbestos waste drums, and other asbestos-contaminated products.

1. Caution Signs: 29 CFR 1910.145, paragraph (d)(4), vertical format, minimum 20 by 14 inches, with the legend:

**DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING
ARE REQUIRED IN THIS AREA**

2. Caution Labels: Provide label with sufficient print size to be clearly legible with bold print on a contrasting background, displaying the following legend:



**DANGER CONTAINS ASBESTOS
FIBERS AVOID CREATING DUST
CANCER AND LUNG DISEASE
HAZARD**

3.2 Equipment

The Contractor shall make available three complete sets of personal protective equipment daily, as required herein, for entry to and inspection of the asbestos control area by the Owner's Representative or other authorized personnel. The personal protective equipment furnished shall include disposable protective whole body covering with head covers, gloves, foot coverings, eye protection.

- **Respirators:** Select respirators approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, for use in atmospheres containing asbestos fibers. Respirator selection shall be in accordance with OSHA Regulation 29 CFR 1910.134. Workers shall wear properly fitted respirators to provide an effective seal. Respirators shall be used in the following circumstances:
 - Class I asbestos work.
 - Class II work where the ACM is not removed in a substantially intact state.
 - All Class II and III asbestos work where the employer does not produce a “negative exposure assessment”.
 - During all Class III jobs where TSI or surfacing ACM or PACM is being disturbed.
 - During all Class IV work performed within the regulated areas where employees performing other work are required to wear respirators.
 - During all work where employees are exposed above the TWA (0.1 f/cc) or excursion limit (1.0 f/cc).
- **Eye Protection:** Furnish eye protection for personnel engaged in asbestos operations when not using a full-face respirator.
- **Protective Clothing:** Provide disposable full-body coveralls with head covers and require that they be worn by all workers in the Regulated Area. Secure sleeves at the wrists and secure foot coverings at the ankles with duct tape. Cloth or nylon undergarments may be worn under the disposable protective coveralls. Hoods, associated with disposable garments, shall be worn on the outside of the respirator.
- **Boots:** Provide work boots with non-skid soles, and where required by OSHA, for protection for all workers.
- **Decontamination Systems:** Provide a personnel 5-stage decontamination staging area and an equipment decontamination staging area as described herein. Personnel entry/exit procedures shall be located adjacent to the regulated area as described in 29 CFR 1926.1101. Wastewater shall be disposed of as asbestos waste or shall be filtered through a filter of at least 0.5-micron particle size collection capability before disposal into the sanitary sewer



system. Handle and dispose of filters as asbestos contaminated waste. Soap, shampoo, disposable towels, etc., shall be provided by the Contractor.

- Tools and Exhaust Systems: Provide the local exhaust in accordance with ANSI Z9.2 and as specified herein. Filters on vacuums and exhaust equipment shall be absolute HEPA filters and UL 586 labeled. Replace filters as required to maintain the efficiency of the system.

4. EXECUTION

4.1 Construction of Decontamination Systems

An adequate decontamination area consists of an arrangement of connected rooms/spaces and shall be placed adjacent to the work area. All persons shall pass through this decontamination area during entry to and exit from the work area for any purpose except in case of emergencies. The decontamination unit shall be built as required by SCDHEC Regulation 61-86.1. If the decontamination unit becomes contaminated or its integrity diminished through use, no employee shall use the unit until corrective steps are taken.

- The Contractor shall construct a worker/equipment decontamination enclosure consisting of at least a clean room, a shower room, and an equipment room, each separated by air locks as described below.
- All rooms shall be constructed of non-porous materials than can be easily cleaned and decontaminated.
- Provide GFCI protection for all electrical equipment.
- Provide temporary lighting inside the decontamination enclosure facility.

The Equipment Room shall have two airlocks, one adjacent to the abatement work area and one adjacent to the shower room. The room shall be of sufficient size so as to accommodate at least one worker to change clothes, and temporarily house any equipment which the contractor wishes to store when not in use. Within this room, workers shall completely disrobe with the exception of respirators. The area shall have facilities for decontaminating material and equipment, and a container lined with 0.15 mm polyethylene bag for collection of disposable coveralls and foot coverings. All boots, shoes, etc. shall remain in the equipment room until the project is completed when they will be bagged and moved to the next asbestos removal project as contaminated equipment or disposed of as asbestos waste.

Shower Room: This is a separate room used for transit by cleanly dressed workers entering the job from the clean room or by workers showering after undressing in the equipment room. Under the shower, respirators shall be rinsed thoroughly then removed and cleaned. Used filters shall be placed in suitable plastic bags on the contaminated side of the shower, sealed, and labeled for disposal.



The shower stall shall have two open sides and be set up to allow a single pass through between the clean room and equipment room and be built with rigid sides and top. Shower water shall be filtered. No leakage of shower water to the outside of the shower is allowed. Shower drain water shall be filtered with a 5-micron filter. Any leakage to the outside is to be considered contaminated. This room shall be separated from the clean room and equipment room by an airlock using poly barriers (Z flaps). The shower room shall provide hot and cold running water and soap and towels.

The shower stall shall consist of a leak tight shower enclosure unit with integrated drain pan fabricated from fiberglass or other durable waterproof material. Equip with hose bibs for hot and cold water. Arrange water shut off and drain pump operation controls so that a single individual can shower without assistance from either inside or outside of the abatement work area. Provide splash proof entrances. Provide back flow prevention device and vacuum breaker, where required. Connect drain to a reservoir, pump water from reservoir through filters to a drain. Mount filters inside shower stall in manner that allows for access for filters to be changed from inside the shower. Change filters daily or more often if necessary. Locate filters inside shower unit so that water lost during filter changes is caught by shower pan. Hot and cold water shall be available at a minimum of 3 gallons of water per minute per worker. There shall be 1 shower for every 10 workers. Hot and cold water shall be available and controlled within the shower. This assembly is to be setup as a permanent fixture for the duration of the project.

Filtered Waste-Water Drainage: Provide cascaded disposable HEPA filter units on drain lines from showers or any other fluid source carrying ACM. Connect so that discharged water passes primary filter and output of primary (particles 20 microns and smaller) filter passes through secondary (particles 5 microns and smaller) filter. Filtered water shall be discharged into a sanitary sewer.

Clean Room: In this room the workers shall leave all street clothes and put on clean working clothes to include all personal protective equipment. Respiratory protection equipment shall be kept in this area. No asbestos contaminated items shall enter this room. Workers enter this room either from outside the structure dressed in street clothes or directly from the showers. This room shall be reasonably heated or cooled. This room shall be separated from the outside by poly barriers (Z flaps) or a door (lockable, if located outside the building).

4.2 Asbestos Work Area Preparation

Access to the Regulated Area shall be limited to persons authorized in accordance with OSHA and SCDHEC. Eating, drinking, smoking, and chewing of gum or tobacco shall not be permitted in the work area, equipment room, or shower area.

- Post Warning signs and barrier tape in and around the work areas as required by all applicable regulatory agencies. Restrict access to work area to personnel approved by Contractor or Consultant. All access areas, which are not part of the work area, shall be sealed off from public access.
- The Contractor shall implement an electrical practice protocol that includes, but is not limited to, lockout and GFCI shutdown as described in OSHA Construction Standard 29 CFR 1926.417. All electrical powered equipment utilized during the project shall have ground-fault protection as described in OSHA Construction Standards. All equipment and



wiring shall be in compliance with National Fire Protection Association Standard 70, and the National Electrical Code.

- The Contractor shall thoroughly seal the work area for the duration of the work by completely sealing off all openings and fixtures in the work area to include all “critical barriers”. Entrances and exits from the work area will have air locks and triple barriers of plastic sheeting so that the work area is always closed off by one barrier when workers enter or exit.
- Any wall and ceiling surfaces inside the work area that is not scheduled to be removed shall be covered with new (unused) plastic sheeting taped securely in place to protect from water damage (see below for poly specifications). It may be necessary in some instances to use nails and wood blocks to secure the plastic sheeting when tape cannot support the weight (as when humidity is excessive). No water may be left standing on the floor at the end of the workday. Integrity of these seals shall be regularly checked and maintained by the Contractor. The Owner shall hold the Contractor responsible for any damage to the building and the contents, including fixed equipment, resulting from leakage or spillage of water, or from any other intentional or negligent acts.

Walls and Ceilings – where applicable: Apply one or more layers of 4-mil (minimum) polyethylene plastic sheeting with joints lapped 24 inches and taped securely. Construct a clear viewing port on the wall measuring at least 24" x 24" in an external wall of the contained work area to allow unobstructed view of abatement activities.

Floors – where applicable: Apply one or more layers of 6-mil (minimum) polyethylene plastic sheeting with joints lapped 24 inches and taped securely.

Windows, doors, and any openings (criticals) – Apply two separate layers of 6-mil (minimum) polyethylene plastic sheeting and tape securely.

- The Contractor shall set up the work areas, load-out areas and decontamination areas.
- The Contractor shall establish and mark emergency and fire exits from the work area. Emergency procedures shall have priority over established decontamination entry and exit procedures. Install portable fire extinguishers in compliance with National Fire Protection Association, Standard No. 10, portable extinguishers. A minimum of one (1) ABC dry chemical rated fire extinguisher shall be in the clean room plus one for every 3000 square feet in the work area.
- A system of HEPA-equipped air filtration devices shall be configured so that a pressure differential is established between the work area and the surrounding area (-0.02” to -0.04” water column) as required by regulation. Tests will be made and documented four times during every eight-hour work shift by a licensed air sampler independent from the contractor to confirm this condition. The abatement contractor shall also document pressure differential readings in daily logs. If during the removal process, negative pressure is not maintained



in the work area, all removal operations shall be immediately suspended until repairs can be made to obtain the required pressure differential. The abatement contractor is responsible for providing and setting up calibrated test equipment to determine pressure differential. The manometer must be calibrated prior to the start of each work shift and the inlet sensor of the manometer shall be located at the farthest point from any source of makeup air. Provide an operational air circulation system supplying an air circulation rate of 4 air changes per hour. Contractor shall also account for increases in the work area volume when removing walls and ceilings scheduled for abatement. The pressure differential is maintained at all times until the final visual inspection and air tests confirm the area is clean and acceptable for occupancy. Negative air exhaust will not be vented into the building. The Contractor shall check daily for leaks.

4.3 Asbestos Removal

Prior to asbestos removal, the Contractor's equipment, work area and decontamination units will be reviewed by the Contractor's Onsite Supervisor to ensure compliance with regulations. Needed corrections shall be made prior to resuming asbestos removal activities. The following applicable steps shall be taken:

- The asbestos containing materials shall be sprayed with amended water to enhance penetration prior to executing removal. Thorough wetting of the asbestos-containing materials shall continue throughout the removal operations to reduce airborne fiber levels. Wet any debris generated to keep continuously wet. The material shall be sufficiently saturated to meet the NESHAP requirements referenced in these specifications and to prevent emission of airborne asbestos fibers in excess of the exposure limits prescribed in the OSHA 29 CFR 1926.1101 Standard referenced in the specifications.
- The asbestos material shall be removed in small sections by two-man teams, on staging platforms when necessary. There shall be a separate water source for each asbestos team in the work area. Before beginning the next section, the material shall be packed while still wet into sealable plastic bags (6-mil minimum) and placed into suitable containers for transport. Asbestos-containing waste shall not accumulate on the floor before bagging. Bags and containers shall be marked with labels prescribed by the OSHA and NESHAP regulations referenced in these specifications. All material shall be double bagged and the outside bag and container shall be clean before leaving the load-out area. Asbestos waste bags shall not be dropped, thrown, or otherwise carelessly handled at any time.
- Floor tile mastic adhered to concrete - remove adhesive floor mastic residue by using adhesive removal solvents. Provide a slow-drying solvent intended to remove tile adhesive. Provide material that is not flammable, does not create combustible vapors and has no significant inhalation hazard and use according to manufacturers' instructions.
- All loose asbestos material removed in the work area shall be bagged, sealed, and labeled properly before personnel breaks or end of shift.



4.4 Clean Up

- All plastic sheeting, tape, cleaning material, clothing, and all other disposable material or items used in the work area shall be packed into sealable plastic bags (6-mil minimum). Each bag shall be individually sealed and placed in containers, at a minimum, a second bag, suitable for transport to the landfill.
- All materials are to be contained in one of the following: (1) Two 6-mil disposal bags, twist and fold over gooseneck style, and seal both bags with duct tape; (2) Two 6-mil disposal bags, using the same procedures as above, and a fiberboard or steel drum; (3) One 6-mil disposal bag using the same procedures as above, and a fiberboard or steel drum to be buried with the waste. The bags and/or containers shall be marked with the OSHA label prescribed by the OSHA 29 CFR 1926.1101 Standard referenced in these specifications. In addition to the OSHA labeling requirements, all containers shall be labeled with the name of the waste generator and the location at which the waste was generated. Waste stored on the site prior to disposal, must be maintained in a secured locked located where access is controlled. Dispose of as specified elsewhere.
- All excess water (except shower water) shall be either combined with removed material or other absorptive material and properly disposed of as per EPA regulations, or filtered, using a 5-micron final filter, and disposed of properly. Contractor shall not place water in storm drains, onto lawns, or into ditches, creeks, streams, rivers or other areas.
- The Contractor shall be responsible for any asbestos fiber contamination of adjoining areas and/or properties which occur as a result of the asbestos abatement activities.

4.5 Decontamination of Work Areas

After the completion of gross removal, decontaminate all equipment and machinery used for work.

- Equipment shall be cleaned, and all contaminated materials removed before removing poly from any walls, floors, and/or ceilings where applicable. After poly sheets have been removed from walls and floors, but are still remaining on all windows, doors, and the critical components, the Contractor shall clean all surfaces in the work area, including ducts, electrical conduits, steel beams, roof deck, etc., with amended water and/or HEPA filtered vacuum. After cleaning the work area, the Contractor shall allow the area to thoroughly dry and then wet-wipe and/or HEPA vacuum all surfaces in work area again. At the completion of the second cleaning operation, the Contractor's supervisor and Owners representative shall perform a complete visual inspection of the work area to ensure that the work area is dust and fiber free. Final air sampling shall not commence until the visual inspection is completed and passed.
- If the Owners representative finds that the work area has not been adequately decontaminated, cleaning and/or air monitoring shall be repeated until the work area is in compliance. All repeat visual inspections and air monitoring will be conducted only after all surfaces are dry.



- A lock-down/encapsulant material shall be applied to porous surfaces after the work area has been visually observed to be dust and fiber free.
- After the project has been deemed acceptable by air monitoring results collected by the Owner's Air Monitor and before the HEPA exhaust system is disconnected, all pre-filters shall be replaced. Old pre-filters shall be disposed of as asbestos contaminated material. All HEPA units used in the work area will be cleaned and all intakes and exhausts shall be wrapped with 6-mil poly before leaving the work area.
- After the work area is found to be in compliance from final air monitoring results, all entrances and exits shall be unsealed and the plastic sheeting, tape, and any other trash and debris shall be disposed of in sealable plastic bags (6-mil minimum) and buried in the approved waste disposal site.

4.6 Disposal of Asbestos Material and Contaminated Debris

- All waste removal from the work area/containment shall be transported to the load vehicle/dumpster in sealed containers or bags. Continuously monitor the path for any debris or broken bags. Fully clean area if accidental spill occurs.
- All asbestos materials and miscellaneous contaminated debris shall be properly sealed and protected, and the load-out vehicle/dumpster shall be locked, while located on the facility site and then transported to a predesignated disposal site in accordance with 40 CFR 61.150 and DOT 49 CFR Parts 100-399.
 1. An enclosed vehicle will be used to haul waste material to the disposal site. No rental vehicles or trailers shall be used. Vehicle selection, vehicle covers, and work practices shall assure that no asbestos becomes airborne during the loading, transport, and unloading activity, and that material is placed in the waste site without breaking any seals.
 2. Waste disposal bags shall consist of polyethylene bags (6-mil) with labels.
 3. Containers shall consist of non-porous (steel/plastic) drums or equivalent appropriate for holding waste disposal bags during transportation to the disposal site.
 4. Protect walls, floors, and ceilings of the interior of the truck or dumpster with one layer of 6-mil poly sheeting.
 5. Do not transport disposal bagged materials in open trucks. Comply with any local or stated regulations for prior notice and delivery, and comply with any special landfill requirements.



- The Contractor shall transport the containers and bags of waste material to the approved waste disposal site. The sealed plastic bags shall be placed into the burial site unless the bags have been broken or damaged. Upon the landfill's approval damaged bags shall be placed in the non-porous containers and the entire contaminated package shall be buried. Uncontaminated containers may be recycled.
- Workers unloading the asbestos will wear appropriate personal protective equipment when handling material at the disposal site. Asbestos warning signs shall be posted during loading and unloading of asbestos waste.
- The Contractor shall use the Waste Shipment Record for disposal records as per 40 CFR 61.150 and distribute a copy of all waste shipment records to the Owner after the completion of the project.

4.7 Air Monitoring

The air monitor firm performing air monitoring to meet SCDHEC Regulation 61-86.1 shall have a current South Carolina license for asbestos air monitoring. The Contractor is responsible for OSHA monitoring. The air monitoring firm shall also offer expertise to the designer and contractor but is not directly responsible for the performance of the job. The air monitoring firm will not supervise, direct, control or have authority over or be responsible for Contractor or Subcontractors means, methods, techniques, sequences, or procedures. The air monitoring firm will not issue any “stop-work” notifications to the Contractor or Subcontractors and is not in a position to direct or control the work of the Contractor or Subcontractor. The Contractor remains responsible for handling asbestos-containing materials and their health and safety programs in accordance with applicable local, state, and federal regulations.

Monitoring During Asbestos Work: Prior to abatement, background air sampling will be conducted in the work area. During abatement activities, area air monitoring will be conducted for a minimum of two and one-half hours for every four-hour shift at the following locations: the clean room entrance of the decontamination system, inside the equipment room of the decontamination system, outside the work area, where the negative pressure differential equipment exhausts and downwind of the containment. Additional samples may be collected at the discretion of the Air Monitor.

Analytical Methods: Background and daily air samples, during asbestos work, will be analyzed by Phase Contrast Microscopy (PCM) using the NIOSH 7400 Method. If monitoring outside the asbestos control area shows airborne concentrations have reached 0.01 fibers per cubic centimeter (f/cc) of air or background quantity whichever is greater, the Contractor shall stop work, correct the condition, and notify the Owner's Representative immediately.

Clearance Monitoring After Final Cleanup of Regulated Materials: After the Owners representative performs a visual observation of the work area and is acceptable, final clearance air monitoring will be done using aggressive sampling methods with appropriate methods presented below.

- When quantities of RACM exceed 3,000 square-feet or 1,500 linear-feet, Transmission Electron Analysis (TEM) is required in accordance with AHERA methodology. A clearance criteria of 70 asbestos structures per square millimeter average over TEM samples collected



will be required. A minimum of five samples shall be collected inside each work area which shall include the interior portion of the abatement along with the crawlspace abatement. If the air results exceed the clearance criteria, cleaning shall be repeated until the work area is in compliance.

- All repeat air monitoring will be conducted only after all surfaces are dry. If an area fails clearance sampling, the contractor shall re-clean work area. Additional clearance testing will be at the expense of the contractor.



References

- U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA), including but not limited to:
 1. Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite: Final Rules Title 29, Part 1910, Section 1001 and Part 1926, Section 1101, of the Code of Federal Regulations.
 2. Respiratory Protection: Title 29, Part 1910, Section 134 and Title 29, Part 1926, Section 103 of the Code of Federal Regulations.
 3. Construction Industry: Title 29, Part 1926, of the Code of Federal Regulations.
 4. Access of Employee Exposure and Medical Records: Title 29, Part 1910, Section 20 and Title 29, Part 1926, Section 33 of the Code of Federal Regulations.
 5. Specifications for Accident Prevention Signs and Tags: Title 29, Part 1910, Section 145 of the Code of Federal Regulations.
 6. Personal Protective Equipment: Title 29, Part 1910, Section 132 and Title 29, Part 1926, Sections 95 through 107 of the Code of Federal Regulations.
 7. Hazard Communication: Title 29, Part 1910, Section 1200 and Title 29, Part 1926, Section 59 of the Code of Federal Regulations.
 8. Lead in Construction; Title 29, Part 1926, Section 62.

- U.S. Environmental Protection Agency (EPA) including but not limited to:
 1. Asbestos Abatement Project Rule: 40 CFR Part 763 Subpart G; as of July 1, 1991.
 2. Regulations for Asbestos: Title 40, Part 61, Subpart A of the Code of Federal Regulations.
 3. National Emissions Standard for Asbestos: Title 40, Part 61, Subpart M (Revised Subpart B); Code of Federal Regulations.
 4. Hazardous Wastes: Title 40, Part 260-265.

- American National Standards Institute (ANSI):
 1. ASTM D1331 - 1989: Surface and Interfacial Tension of Solution of Surface-Active Agents.
 2. American National Standard for Respiratory Protection - Respirator Use-Physical Qualifications for Personnel, Publication Z88.6-1984
 3. Practices for Respiratory Protection - Publication Z88.2-1992

- American Society for Testing and Materials (ASTM):
 1. ASTM D-1331 - 1989: Surface and Interfacial Tension of Solution of Surface Active Agents.

- South Carolina Dept. of Health and Environmental Control (SCDHEC)
 1. Regulation 61-86.1 Standards of Performance for Asbestos Projects.



Terminology

Air Filtration Units: A local exhaust unit, utilizing high-efficiency particulate air (HEPA) filtration and capable of maintaining a minimum negative pressure differential of 0.05 mm of water within the containment barrier with respect to that of the environment surrounding the containment barrier. The unit also cleans recirculated air or generates a constant air flow from adjacent areas into the abatement work area through the decontamination enclosure.

Airlock: A chamber which permits entrance and exit with minimum air movement between a contaminated area and an uncontaminated area

Aggressive Sampling Methods: A method of sampling which uses an electric fan, electric leaf blower to simulate vigorous activity in the abated area while air samples are being collected.

Air Pressure Monitoring: The process of measuring the air pressure differential between the containment barrier and the surrounding area using inches of water unit.

Amended Water: Water containing a wetting agent or surfactant.

Area Monitoring: Sampling of asbestos fiber concentrations within the asbestos control area and outside the asbestos control area which is representative of the airborne concentrations of asbestos fibers that may reach the breathing zone.

Asbestos: A group of naturally occurring minerals that separate into fibers. There are six asbestos minerals used commercially: chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

Asbestos-Containing Material (ACM): Any material containing more than 1% asbestos by volume of any type or mixture of types.

Asbestos Fibers: Asbestos fibers having a length to diameter ratio of at least 3:1 and is 5 micrometers long or longer, as analyzed by Phase Contrast Microscopy utilizing NIOSH Method 7400.

Critical Barrier: Those portions of the containment barrier which represent the minimum structural components necessary to maintain the asbestos removal area in airtight isolation from the surrounding areas. Critical barriers (minimum 6-mil thickness, two layers polyethylene sheeting) shall be placed at floors, windows, ventilation louvers and other openings as necessary to achieve abatement work area isolation before putting up the double-layer plastic sheeting containment enclosure within which abatement work is performed. If a temporary plastic sheeting/stud wall must be erected, it shall be treated as a critical barrier. The double-layer plastic sheeting containment enclosure shall then be erected on that wall. Wrappings on lights, control boxes, etc., do not constitute part of the critical barrier.

Encapsulant: A bonding or sealing agent applied after the removal of ACM or to the ACM-edges of partially abated substrates which surrounds or embeds residual asbestos fibers in an adhesive matrix to prevent the release of airborne fibers.



Equipment Decontamination and Waste Load Out System: A decontamination area for waste materials and equipment, typically consisting of a designated area of work area for HEPA vacuuming and wet wiping.

Friable Asbestos Material: Material that contains more than one percent asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763 Section 1, Polarized Light Microscopy, that when dry can be crumbled, pulverized, or reduced to powder by hand pressure.

GFCI (Ground Fault Circuit Interrupter): A type of ground fault protection in areas where personnel are at high risk of receiving electrical shocks (for example, in damp locations); makes use of a device designed to trip at a ground current in the milliampere range, i.e., very much below currents that are normally harmful.

Gooseneck: Process for sealing the outer bag by twisting the opening of the bag, folding twisted portion of bag over, and creating a loop. Adequately secure the opening of the bag to the base of the twist, using duct tape.

HEPA Vacuum Equipment: High efficiency particulate air (HEPA) filtered vacuuming equipment capable of collecting and retaining asbestos fibers.

HEPA Filter: A high efficiency particulate air filter that will capture particles with an aerodynamic diameter of 0.3 micrometers with a minimum efficiency of 99.97 percent.

Impermeable Waste-Disposal Containers: Suitable to receive and retain any asbestos-containing or contaminated material until disposal at an approved site. The containers shall be labeled in accordance with OSHA Regulation 29 CFR 1910.1001 and 29 CFR 1926.1101. Containers must be both water-tight and air-tight.

Lockdown: Lockdown is the procedure of applying a protective coating or sealant to a surface from which asbestos-containing material has been removed. Its primary function is to control and minimize airborne asbestos fiber generation that might result from any asbestos-containing residue on the substrate.

Manometer: Instrument for the measurement of gas pressure whose units are represented in inches of water column.

Negative Pressure System: A system in which static pressure in an enclosed control area is lower than that of the environment outside the control area, as specified herein.

NIOSH: National Institute for Occupation Safety and Health.

Non-friable Asbestos Material: Material that contains more than one percent asbestos as determined by the method specified in Appendix A, Subpart F, 40 CFR Part 763 Section 1, in which the fibers have been locked in by a bonding agent, coating, binder, or other material so that the asbestos is well bound and may not release fibers in excess of the asbestos permissible exposure limit during any



appropriate use, handling, storing, transporting, or processing. Non-friable asbestos material may be hazardous and rendered friable during removal and disposal procedures. Cutting, crushing, grinding and sanding will render non-friable materials into a friable state.

Personnel Decontamination Unit System: A decontamination unit consisting of a clean room, shower room, and equipment room separated by airlocks, thus making a 5-stage system. This unit is attached to the regulated area.

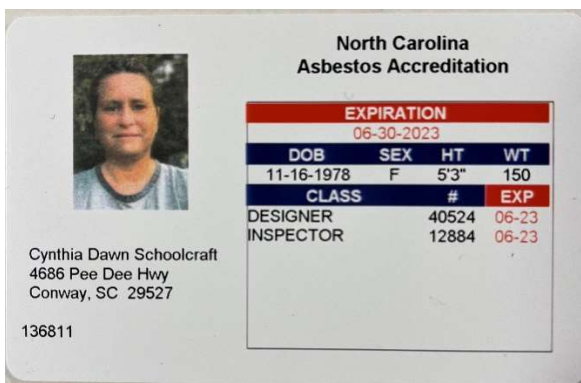
Personal Monitoring: Sampling of asbestos fiber concentrations within the breathing zone of an employee to determine the 8-hour time weighted average in accordance with Appendix A of 29 CFR 1926.1101. The samples shall be representative of the employee's work tasks. The breathing zone shall be considered an area within 12 inches of the nose or mouth of an employee.

Regulated Area: An area established to demarcate areas where airborne concentrations of asbestos, can be expected to exceed the permissible exposure limits. The regulated area may take the form of an enclosed control area or an area demarcated to prohibit occupants from the vicinity of the area and prevent potential exposure to asbestos.

Surfactant (Wetting Agent): A chemical wetting agent added to water to improve penetration. The surfactant shall be a 50/50 mixture of polyoxyethylene ether and polyoxyethylene ester, or equivalent, mixed in a proportion of one fluid ounce to 5 gallons of water or as specified by the manufacturer. An equivalent surfactant shall be understood to mean a material with a surface tension of 29 dynes/cm as tested in accordance with ASTM D 1331.



Licenses



12884, 06/30/2023, North Carolina, Dawn Schoolcraft



American Council for Accredited Certification

hereby certifies that
Cynthia Dawn Schoolcraft
has met all the specific standards and qualifications of the re-certification process,
including continued professional development, and is hereby re-certified as a

CIEC

Council-certified
Indoor Environmental Consultant

This certificate expires on September 30, 2023

Charles F. Wiles 1909008
Charles F. Wiles, Executive Director Certificate Number

This certificate remains the property of the American Council for Accredited Certification.

1909008, 09/30/2023, South Carolina, Dawn Schoolcraft



LBP-R-1162035-2, 03/16/2024, South Carolina, Dawn Schoolcraft

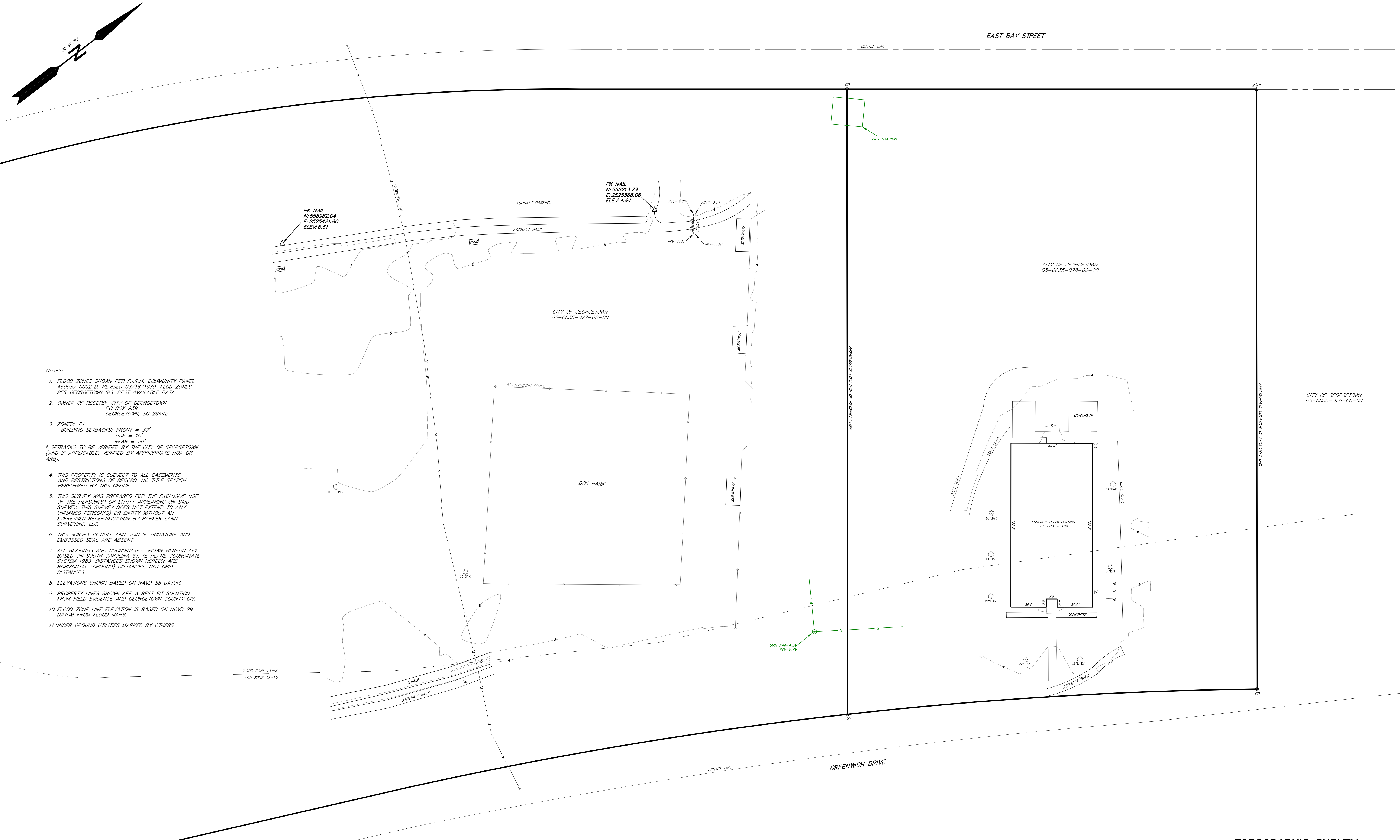
SCDHEC ISSUED Asbestos ID Card

Dawn Schoolcraft



		Expiration Date:
AIR SAMPLER	AS-00418	06/05/23
CONSULTBI	BI-00738	06/06/23
CONSULTMP	MP-00245	06/06/23
CONSULTPD	PD-00157	06/07/23

BI-00738, 06/06/2023, South Carolina, Dawn Schoolcraft

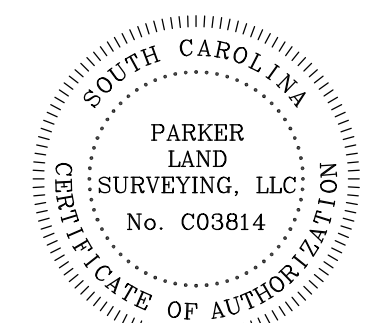


- NOTES:
- FLOOD ZONES SHOWN PER F.I.R.M. COMMUNITY PANEL 450087 0002 D, REVISED 03/16/1989. FLOOD ZONES PER GEORGETOWN GIS, BEST AVAILABLE DATA.
 - OWNER OF RECORD: CITY OF GEORGETOWN
PO BOX 939
GEORGETOWN, SC 29442
 - ZONED: R1
BUILDING SETBACKS: FRONT = 30'
SIDE = 10'
REAR = 20'
 - * SETBACKS TO BE VERIFIED BY THE CITY OF GEORGETOWN (AND IF APPLICABLE, VERIFIED BY APPROPRIATE HOA OR ARB).
 - THIS PROPERTY IS SUBJECT TO ALL EASEMENTS AND RESTRICTIONS OF RECORD. NO TITLE SEARCH PERFORMED BY THIS OFFICE.
 - THIS SURVEY WAS PREPARED FOR THE EXCLUSIVE USE OF THE PERSON(S) OR ENTITY APPEARING ON SAID SURVEY. THIS SURVEY DOES NOT EXTEND TO ANY UNNAMED PERSON(S) OR ENTITY WITHOUT AN EXPRESSED RECERTIFICATION BY PARKER LAND SURVEYING, LLC.
 - THIS SURVEY IS NULL AND VOID IF SIGNATURE AND EMBOSSED SEAL ARE ABSENT.
 - ALL BEARINGS AND COORDINATES SHOWN HEREON ARE BASED ON SOUTH CAROLINA STATE PLANE COORDINATE SYSTEM 1983. DISTANCES SHOWN HEREON ARE HORIZONTAL (GROUND) DISTANCES, NOT GRID DISTANCES.
 - ELEVATIONS SHOWN BASED ON NAVD 88 DATUM.
 - PROPERTY LINES SHOWN ARE A BEST FIT SOLUTION FROM FIELD EVIDENCE AND GEORGETOWN COUNTY GIS.
 - FLOOD ZONE LINE ELEVATION IS BASED ON NGVD 29 DATUM FROM FLOOD MAPS.
 - UNDER GROUND UTILITIES MARKED BY OTHERS.

I HEREBY STATE TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THE SURVEY SHOWN HEREON WAS MADE IN ACCORDANCE WITH THE REQUIREMENTS OF THE MINIMUM STANDARDS MANUAL FOR THE PRACTICE OF LAND SURVEYING IN SOUTH CAROLINA, AND MEETS OR EXCEEDS THE REQUIREMENTS FOR A CLASS B SURVEY AS SPECIFIED THEREIN.

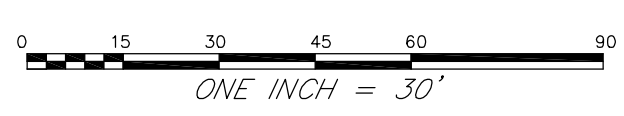
Parker Land Surveying, LLC
400 Church Street
Georgetown, SC 29440
Phone: (843) 554-4465
Fax: (843) 554-7779

Gregory F. Cunningham
P. CIV. S.C. L.S. No. 17924



LEGEND

- I.P.F. - IRON PIPE FOUND
- OP - CALCULATED POINT
- - LIGHT POLE
- ⊗ - WATER METER
- ⊕ - BOLLARD
- ⊙ - SEWER MANHOLE
- ⊖ - WATER VALVE



TOPOGRAPHIC SURVEY
OF A PORTION OF EAST BAY PARK,
SURVEYED FOR
ROSENBLUM COE ARCHITECTS
LOCATED IN THE CITY OF GEORGETOWN,
GEORGETOWN COUNTY, SOUTH CAROLINA
DATE: MARCH 26, 2020

JOB # E-20-080 DAY

ELEVATION CERTIFICATE

Important: Follow the instructions on pages 1-9.

Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.

SECTION A – PROPERTY INFORMATION				FOR INSURANCE COMPANY USE	
A1. Building Owner's Name City of Georgetown				Policy Number:	
A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 310 Greenwich Drive				Company NAIC Number:	
City Georgetown		State South Carolina		ZIP Code 29442	
A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.) TMS 05-0035-028-00-00					
A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.) <u>Non-Residential</u>					
A5. Latitude/Longitude: Lat. <u>N 33.358501</u> Long. <u>W 79.277256</u> Horizontal Datum: <input type="checkbox"/> NAD 1927 <input checked="" type="checkbox"/> NAD 1983					
A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.					
A7. Building Diagram Number <u>1B</u>					
A8. For a building with a crawlspace or enclosure(s):					
a) Square footage of crawlspace or enclosure(s) <u>0.00</u> sq ft					
b) Number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade <u>0</u>					
c) Total net area of flood openings in A8.b <u>0.00</u> sq in					
d) Engineered flood openings? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
A9. For a building with an attached garage:					
a) Square footage of attached garage <u>N/A</u> sq ft					
b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade <u>0</u>					
c) Total net area of flood openings in A9.b <u>0.00</u> sq in					
d) Engineered flood openings? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION					
B1. NFIP Community Name & Community Number Georgetown County 450087			B2. County Name Georgetown		B3. State South Carolina
B4. Map/Panel Number 4500870 0002	B5. Suffix D	B6. FIRM Index Date 03-16-1989	B7. FIRM Panel Effective/ Revised Date 03-16-1989	B8. Flood Zone(s) AE	B9. Base Flood Elevation(s) (Zone AO, use Base Flood Depth) 9/10
B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9: <input type="checkbox"/> FIS Profile <input checked="" type="checkbox"/> FIRM <input type="checkbox"/> Community Determined <input type="checkbox"/> Other/Source: _____					
B11. Indicate elevation datum used for BFE in Item B9: <input checked="" type="checkbox"/> NGVD 1929 <input type="checkbox"/> NAVD 1988 <input type="checkbox"/> Other/Source: _____					
B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Designation Date: _____ <input type="checkbox"/> CBRS <input type="checkbox"/> OPA					

ELEVATION CERTIFICATE

OMB No. 1660-0008
Expiration Date: November 30, 2022

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 310 Greenwich Drive			Policy Number:
City Georgetown	State South Carolina	ZIP Code 29442	Company NAIC Number

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: Construction Drawings* Building Under Construction* Finished Construction
 *A new Elevation Certificate will be required when construction of the building is complete.

C2. Elevations – Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO.
 Complete Items C2.a–h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters.

Benchmark Utilized: SC VRS Station Vertical Datum: NGVD 1929 Per NGS VERTCON

Indicate elevation datum used for the elevations in items a) through h) below.

NGVD 1929 NAVD 1988 Other/Source: _____

Datum used for building elevations must be the same as that used for the BFE.

Check the measurement used.

- | | | | |
|---|------|--|---------------------------------|
| a) Top of bottom floor (including basement, crawlspace, or enclosure floor) _____ | 6.7 | <input checked="" type="checkbox"/> feet | <input type="checkbox"/> meters |
| b) Top of the next higher floor _____ | N/A | <input type="checkbox"/> feet | <input type="checkbox"/> meters |
| c) Bottom of the lowest horizontal structural member (V Zones only) _____ | N/A | <input type="checkbox"/> feet | <input type="checkbox"/> meters |
| d) Attached garage (top of slab) _____ | N/A | <input type="checkbox"/> feet | <input type="checkbox"/> meters |
| e) Lowest elevation of machinery or equipment servicing the building
(Describe type of equipment and location in Comments) _____ | 12.1 | <input checked="" type="checkbox"/> feet | <input type="checkbox"/> meters |
| f) Lowest adjacent (finished) grade next to building (LAG) _____ | 5.1 | <input checked="" type="checkbox"/> feet | <input type="checkbox"/> meters |
| g) Highest adjacent (finished) grade next to building (HAG) _____ | 5.4 | <input checked="" type="checkbox"/> feet | <input type="checkbox"/> meters |
| h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support _____ | 5.2 | <input checked="" type="checkbox"/> feet | <input type="checkbox"/> meters |

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

Were latitude and longitude in Section A provided by a licensed land surveyor? Yes No Check here if attachments.

Certifier's Name Greggory F. Cunningham	License Number SCPLS#17924	
Title PLS		
Company Name Parker Land Surveying, LLC		
Address 400 Church Street		
City Georgetown	State South Carolina	

Signature 	Date 11-10-2022	Telephone (843) 485-4405	Ext.
---------------	--------------------	-----------------------------	------

Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.

Comments (including type of equipment and location, per C2(e), if applicable)
 Item C2(e) HVAC System

ELEVATION CERTIFICATE

OMB No. 1660-0008
Expiration Date: November 30, 2022

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 310 Greenwich Drive			Policy Number:
City Georgetown	State South Carolina	ZIP Code 29442	Company NAIC Number

SECTION E – BUILDING ELEVATION INFORMATION (SURVEY NOT REQUIRED) FOR ZONE AO AND ZONE A (WITHOUT BFE)

For Zones AO and A (without BFE), complete Items E1–E5. If the Certificate is intended to support a LOMA or LOMR-F request, complete Sections A, B, and C. For Items E1–E4, use natural grade, if available. Check the measurement used. In Puerto Rico only, enter meters.

- E1. Provide elevation information for the following and check the appropriate boxes to show whether the elevation is above or below the highest adjacent grade (HAG) and the lowest adjacent grade (LAG).
- a) Top of bottom floor (including basement, crawlspace, or enclosure) is _____ feet meters above or below the HAG.
- b) Top of bottom floor (including basement, crawlspace, or enclosure) is _____ feet meters above or below the LAG.
- E2. For Building Diagrams 6–9 with permanent flood openings provided in Section A Items 8 and/or 9 (see pages 1–2 of Instructions), the next higher floor (elevation C2.b in the diagrams) of the building is _____ feet meters above or below the HAG.
- E3. Attached garage (top of slab) is _____ feet meters above or below the HAG.
- E4. Top of platform of machinery and/or equipment servicing the building is _____ feet meters above or below the HAG.
- E5. Zone AO only: If no flood depth number is available, is the top of the bottom floor elevated in accordance with the community's floodplain management ordinance? Yes No Unknown. The local official must certify this information in Section G.

SECTION F – PROPERTY OWNER (OR OWNER'S REPRESENTATIVE) CERTIFICATION

The property owner or owner's authorized representative who completes Sections A, B, and E for Zone A (without a FEMA-issued or community-issued BFE) or Zone AO must sign here. The statements in Sections A, B, and E are correct to the best of my knowledge.

Property Owner or Owner's Authorized Representative's Name

Address _____ City _____ State _____ ZIP Code _____

Signature _____ Date _____ Telephone _____

Comments

Check here if attachments.

BUILDING PHOTOGRAPHS

ELEVATION CERTIFICATE

See Instructions for Item A6.

OMB No. 1660-0008
Expiration Date: November 30, 2022

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 310 Greenwich Drive			Policy Number:
City Georgetown	State South Carolina	ZIP Code 29442	Company NAIC Number

If using the Elevation Certificate to obtain NFIP flood insurance, affix at least 2 building photographs below according to the instructions for Item A6. Identify all photographs with date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View." When applicable, photographs must show the foundation with representative examples of the flood openings or vents, as indicated in Section A8. If submitting more photographs than will fit on this page, use the Continuation Page.



Photo One

Photo One Caption FRONT 11-9-2022

Clear Photo One



Photo Two

Photo Two Caption REAR 11-9-2022

Clear Photo Two

ELEVATION CERTIFICATE

BUILDING PHOTOGRAPHS

Continuation Page

OMB No. 1660-0008
Expiration Date: November 30, 2022

IMPORTANT: In these spaces, copy the corresponding information from Section A.			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 310 Greenwich Drive			Policy Number:
City Georgetown	State South Carolina	ZIP Code 29442	Company NAIC Number

If submitting more photographs than will fit on the preceding page, affix the additional photographs below. Identify all photographs with: date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View." When applicable, photographs must show the foundation with representative examples of the flood openings or vents, as indicated in Section A8.



Photo Three

Photo Three Caption RIGHT 11-9-2022

Clear Photo Three



Photo Four

Photo Four Caption LEFT 11-9-2022

Clear Photo Four