PROJECT MANUAL
TECHNICAL SPECIFICATIONS
SENIOR CENTER
CITY OF MAMMOTH SPRING

ACEDP Project Number 790-09129-19

JULY 2021

Prepared By:

CIVIL ENGINEERING ASSOCIATES, LLC

2114 E. Matthews Ave., Suite B
Jonesboro, Arkansas 72401

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Advertisement for Bids

Date: August 8, 2021

City of Mammoth Spring
Senior Center Project
ACEDP Grant No. 790-09129-19

Sealed bids from licensed contractors for construction of the Senior Center in Mammoth Spring, Arkansas, will be received by the Honorable Charles Vaughn, Mayor, City of Mammoth Spring, 325 Main Street, Mammoth Spring, Arkansas 72554 until 11:00 a.m. *(Local Time)* Tuesday, August 31, 2021 and then at said location opened and read aloud.

BIDDERS ARE ADVISED to pay close attention to the Instructions to Bidders for this project. The Instructions to Bidders details special provisions regarding the bid opening.

The scope of work consists of site work and building construction. The Instructions to Bidders, ACEDP grant requirements, Bid and Contract Forms, Plans, Specifications, and other contract documents may be examined and obtained ($125 cost per set obtained) at Civil Engineering Associates, LLC, 2114 East Matthews Avenue, Suite B, Jonesboro, Arkansas 72401 (870) 972-5316.

Bidding information can be downloaded at www.questcdn.com. Reference QuestCDN project number 7981495 for a non-refundable charge of $20.00. Contact QuestCDN Customer Support at 952-233-1632 or info@questcdn.com for assistance in membership registration, downloading digital project information, and vBid online bid submittal. Project bid documents must be downloaded from QuestCDN, which will add your company to the Plan Holder List and allow access to vBid online bidding for the submittal of your bid. Online submittal of bids will be accepted for an additional non-refundable charge of $30.00.

The owner reserves the right to waive any informalities or to reject any or all bids. Bidders may not withdraw their bids within 30 days after the date of bid opening and must provide bid bonds as required. All bidding processes shall be in accordance with State law.

To request bidding information or obtain further information contact:
Civil Engineering Associates, LLC

2114 East Matthews Avenue, Suite B

Jonesboro, Arkansas 72401

Charles Vaughn, Mayor

City of Mammoth Spring

CONTRACT DOCUMENTS

Attachment 1B

Instructions to Bidders

The following information is specific to prospective bidders of ACEDP-funded construction projects:

1. **Receipt and Opening of Bids**

The City of Mammoth Spring (herein identified as "Owner"), invites bids on the forms attached hereto, all blanks of which must be appropriately filled in. Bids will be received by the Owner at the office of City Hall, 325 Main Street, Mammoth Spring, Arkansas 72554 until 11:00 o'clock a.m. (Local Time), Tuesday, August 31, 2021, and then at said office opened and read aloud. The envelopes containing the bids must be sealed and addressed to the Honorable Charles Vaughn, Mayor at City of Mammoth Spring, 325 Main Street, Mammoth Spring, Arkansas 72554 and designated as Bid for Senior Center.

BIDDERS ARE ADVISED THAT THE ENGINEER WILL BE USING ELECTRONIC BIDDING SERVICES PROVIDED BY QUEST CONSTRUCTION DATA NETWORK (www.questcdn.com). BIDDERS ARE ENCOURAGED TO OBTAIN AN ONLINE ACCOUNT WITH QUEST FOR OBTAINING BIDDING DOCUMENTS AND SUBMITTING ELECTRONIC BIDS.

THE BID OPENING WILL BE CONDUCTED VIRTUALLY. ALL PLAN HOLDERS WILL BE GIVEN AN INVITATION TO ATTEND THE BID OPENING VIA VIDEO CONFERENCE THROUGH MICROSOFT TEAMS. BIDDERS ARE ENCOURAGED TO ONLY SEND THEIR BIDS VIA MAIL, DELIVERY SERVICE, OR USE THE QUESTCDN VBID PLATFORM. BIDDERS WHO CHOOSE TO DROP THEIR BID OFF SHALL NOTIFY THE ENGINEER OF THEIR PLAN TO DO SO.

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or scheduled time for bid opening or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within **30 days** after the actual date of bid opening.

2. **Preparation of Bid**

Each bid must be submitted on the prescribed form **and must be accompanied by completed Certification of Bidder Regarding Equal Employment Opportunity and Contractor Section 3 Certification forms**. All blank spaces for bid prices must be filled in, in ink or typewritten, in both words and figures.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, his address, and the name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be

enclosed in another envelope addressed as specified in the bid form. Identification of subcontractors must be per State law.

BIDDERS ELECTING TO UTLIZE ELECTRONIC BIDDING SERVICES WILL BE REQUIRED TO ENTER ALL PROVISIONS OF A RESPONSIVE BID INTO THE BIDDING SYSTEM FOR A COMPLETE BID SUBMITTAL AND ACCEPTANCE INTO THE BIDDING SYSTEM. BIDDERS WILL RECEIVE CONFIRMATION THAT THEIR BID HAS BEEN SUCCESSFULLY SUBMITTED INTO THE BIDDING SYSTEM BY QUEST CONSTRUCTION DATA NETWORK OR THEIR AFFILIATE.

3. **Facsimile/Telegraphic Modification**

Any bidder may modify his bid by facsimile/telegraphic communication at any time prior to the scheduled closing time for receipt of bids, provided such communication is received by the Owner prior to closing time, and, provided further, the Owner is satisfied that a written confirmation of the facsimile/telegraphic modification over the signature of the bidder was mailed prior to closing time. The communication should not reveal the bid price but should provide the addition or subtraction or other modification so that the final prices or terms will not be known by the Owner until the sealed bid is opened. If written confirmation is not received within two days after closing time, no consideration will be given to the facsimile/telegraphic modification.

4. **Method of Bidding**

The Owner invites the following bid(s): Senior Center.

5. **Qualifications of Bidder**

The Owner may make such investigations as he deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish 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 shall not be accepted.

6. **Bid Security**

Each bid must be accompanied by a certified check from the bidder, or a bid bond prepared on the form of the bid bond attached hereto, duly executed by the bidder as principal and having as surety thereon a surety company, licensed in the State of Arkansas, approved by the Owner, in the amount of 5% of the bid. Such check or bid bond will be returned to all except the three lowest bidders within three days after the opening of bids, and the remaining checks or bid bonds will be returned promptly after the Owner and the accepted bidder have executed the contract, or, if no award has been made within 30 days after the date of the

opening of bids, upon demand of the bidder at any time thereafter, so long as he has not been notified of the acceptance of his bid.

7. **Liquidated Damages for Failure to Enter into Contract**

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

8. **Time of Completion and Liquidated Damages**

The bidder must agree to commence work on or before a date to be specified in a written Notice to Proceed issued by the Owner and to fully complete the project within one hundred fifty (150) consecutive calendar days thereafter. The bidder must agree also to pay as liquidated damages, the sum of $500.00 for each consecutive calendar day thereafter.

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 his obligation to furnish all material and labor necessary to carry out the provisions of his contract. Insofar as possible, the contractor, in carrying out his work, must employ such methods or 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, drawings and other contract documents will be made to any bidder orally. Every request for such interpretation should be in writing addressed to Mr. Lance Powell, P.E. at Civil Engineering Associates, LLC, 2114 East Matthews Avenue, Suite B, Jonesboro, Arkansas 72401 and, to be given consideration, must be received at least five days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instruction will be in the form of written addenda to the contract documents which, if issued, will be mailed by certified mail with return receipt requested to all prospective bidders (at the respective addresses furnished for such purposes), not later than three days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the contract documents.

11. **Security for Faithful Performance**

In accordance with the Notice to Proceed, the contractor shall furnish a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract, as specified in the General Conditions included herein. The surety on such bonds shall be a duly authorized surety company, licensed in the State of Arkansas, and satisfactory to the Owner.

12. **Power of Attorney**

Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and 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:

- Bonding and Insurance Requirements
- General Conditions of the Contract
- Regulatory Requirements
- Wage Rates

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 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 only. 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 (if applicable) applied in the numerical order specified by the contract documents, as produces a net amount within the available funds.

16. **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 to be thoroughly familiar with the plans and contract documents (including all addenda). 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 of his bid.

17. **Safety Standards and Accident Prevention**

With respect to all work performed under this contract, the contractor shall

- Comply with the safety standards provisions of applicable laws, building and construction codes and the Manual of Accident Prevention in Construction: published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596 and the requirement of Title 29 of the Code of Federal Regulations, Section 1518, as published in the Federal Register, Volume 36, No. 75, Saturday, April 17, 1971), and specifically OSHA's Standard for Excavation and Trench Safety Systems, 29 CFR Part 1926, Subpart P.
- Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) and property.
- Maintain at his office or other conspicuous place at the job site, all articles necessary for giving first aid to the injured, and shall make standing arrangements for the immediate removal to a hospital or a doctor's care of persons (including employees), who may be injured on the job site.

For Contracts with Excavation in Excess of 5 Feet

- A separate lump sum bid item must be included for Excavation/Trench Safety System (for excavation in excess of 5'). Bidder is required to complete this pay item in accordance with Act 291 of the Arkansas 79th General Assembly.
- In the event a bidder fails to complete this pay item, the Owner shall declare that the bid fails to comply fully with the provisions of the specifications and bid documents and will be considered invalid as a nonresponsive bid. Payment for the lump sum bid item for Excavation/Trench Safety System will be paid at the completion of the contract. No partial payments will be allowed thereunder.

STATEMENT OF QUALIFICATIONS: _____
Bidder

_____
Address

Similar Projects Completed by Bidder:

1. NAME OF PROJECT: _____

   OWNER: _____ADDRESS:_____

   DATE STARTED:_____DATE COMPLETED:_____

   APPROX. QUANTITIES OF MAJOR ITEMS:_____

   _____

   VALUE OF CONTRACT: _____

2. NAME OF PROJECT: _____

   OWNER: _____ADDRESS:_____

   DATE STARTED:_____DATE COMPLETED:_____

   APPROX. QUANTITIES OF MAJOR ITEMS:_____

   _____

   VALUE OF CONTRACT: _____

3. NAME OF PROJECT: _____

   OWNER: _____ADDRESS:_____

   DATE STARTED: _____DATE COMPLETED:_____

   APPROX. QUANTITIES OF MAJOR ITEMS: _____

   _____

   VALUE OF CONTRACT: _____

4. OTHER PROJECT REFERENCES: _____

   _____

Attachment 1C

Bid for Unit Price "Line-Item" Contract

City of Mammoth Spring, Arkansas
Senior Center
ACEDP Grant # 790-09129-19

As bidder, _____*(Insert name of corporation, partnership or individual*), in accordance with your invitation for bids for the construction of the above-identified project, having examined all contract 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, and at the prices as stated below. These prices are to cover all expenses incurred in performing the work required under the contract documents, of which this proposal is a part.

The bidder agrees to perform all work identified above for the following unit prices:

Item Number	Estimated Quantity	Description	Unit Price Each*	Total*
1.	1 L.S.	Earthwork Including "B" Stone Rock Letdown, Silt Fencing, & Sodding of Slopes		
2.	1,725 S.Y.	Furnish & Install 6" Thick Class 7 Base Course		
3.	1,725 S.Y.	Furnish & Install 6" Thick Concrete Paving Including All Required Striping		
4.	140 S.Y.	Furnish & Install 4" Thick Concrete Sidewalk		
5.	1 L.S.	Furnish & Install Complete Senior Center Building Including Foundation		
6.	1 L.S.	Furnish & Install Project Sign		

TOTAL BID $_____

The above unit prices shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance, etc., to cover the finished work of the complete project.

* The unit prices and total price must be specified in both words and figures, e.g., $100.00, one-hundred dollars. In case of discrepancy, the amount shown in words will govern.

Deductive Alternatives

Deductive alternatives are **required for all projects.**

Deductive Alternate No 1: Deduct 1,610 S.Y. of 6" Thick Concrete Paving
Deduct the sum of: "_____" $_____
Total Base Bid minus Deductive Alternate No. 1 $_____

Deductive Alternate No. 2: Deduct 1,725 S.Y. of 6" Thick Class 7 Base Coarse
Deduct the sum of: "_____" $_____
Total Base Bid minus Deductive Alternatives No. 1 and No. 2 $_____

Deductive Alternate No. 3: Deduct Stone Veneer on Exterior of Building
Deduct the sum of: "_____" $_____
Total Base Bid minus Deductive Alternatives No. 1, No. 2, and No. 3
$_____

Deductive Alternate No. 4: Deduct Interior Flooring
Deduct the sum of: "_____" $_____
Total Base Bid minus Deductive Alternatives No. 1, No. 2, No. 3, and No. 4
$_____
Note: Continue the same process as above for all additional deductive alternatives.

** If Deductive Alternate No. 3 is taken, the contractor is responsible for all provisions necessary for the affected walls to be finished out similar to the other walls of the building. Bidders shall take this into consideration when preparing bid.*

The bidder hereby agrees to commence work under this contract within 10 days after receiving a Notice to Proceed from the Grantee and to fully complete the project within one hundred fifty (150) 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.

The bidder acknowledges receipt of the following addendum:

_____

_____

_____

The bidder understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding.

The bidder agrees that this bid shall be good and may not be withdrawn for a period of 30 calendar days after the bid opening.

Upon receipt of written notice of the acceptance of this bid, bidder will execute the formal contract attached within 10 days and deliver a Surety Bond or bonds as required by the General Conditions. The bid security attached in the sum of $_____ is to become the property of the Owner in the event the contract and bond are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the Owner caused thereby.

Respectfully submitted:

By: _____
(Signature)

By: _____ _____
(Signature) *Company DUNS Number*

_____ _____
(Please Print Name of Owner/Contractor) *Individual/Company Tax ID Number*

(Seal - if bid is by a corporation)

_____
(Title)

_____
(Business Address and Zip Code)

_____
(Date)

Attachment 1E

Certification of Bidder Regarding Equal Employment Opportunity

This certification is required pursuant to Executive Order 11246 (30 FR 12319-25) which provides that any bidder or prospective contractor or any of their proposed subcontractors, shall state as an initial part of the bid whether it has participated in any previous contract or subcontract subject to the equal opportunity clause; and if so, whether it has filed all compliance reports due under applicable instructions. Where the certification indicates that the bidder has not filed a compliance report due under applicable instructions, such bidder shall be required to submit a compliance report within seven (7) calendar days after bid opening. **No contract shall be awarded unless such report is submitted.**

Certification by Bidder

Name and Address of Bidder (Including Zip Code)

_____

_____

_____

_____

Name and Title of Bidder's Agent

1. Has the bidder participated in a previous contract or subcontract subject to the Equal Opportunity Clause?
   Yes No

2. Were compliance reports required to be filed in connection with such contract or subcontract?
   Yes No

3. Has the bidder filed all compliance reports due under applicable instructions?
   Yes No N/A

4. Has the bidder ever been or is being considered for sanction due to violation of Executive Order 11246, as amended?
   Yes No

_____ _____

Signature and Title of Bidder's Agent *Date*

Attachment 1F

Contractor Section 3 Certification
for contracts over $100,000

_____ *(Name of contractor)* agrees to implement the following specific affirmative steps directed at increasing the utilization of lower income residents and businesses within the City or County of _____.

A.	To implement Section 3 requirements by seeking the assistance of local officials in determining the exact boundaries of the applicable project area
B.	To attempt to recruit from within the City/County the necessary number of lower income residents through: local advertising media, signs placed at the proposed site for the project, and community organizations and public or private institutions operating within or serving the project area
C.	To maintain a list of all lower income residents who have applied either on their own or on referral from any source, and to employ such persons, if otherwise eligible and if a vacancy exits
D.	To insert this Section 3 plan in all bid documents, and to require all bidders to submit a Section 3 affirmative action plan (when contracts exceed $100,000) including utilization goals and the specific steps planned to accomplish these goals
E.	To formally contact unions, subcontractors, and trade associations to secure their cooperation for this project
F.	To ensure that all appropriate project area business concerns are notified of pending subcontractual opportunities
G.	To maintain records, including copies of correspondence, memoranda, etc., which document that all of the above affirmative action steps have been taken
H.	To appoint or recruit an executive official of the company or agency as Equal Opportunity Officer to coordinate the implementation of this Section 3 plan
I.	To list on the Estimated Project Workforce Breakdown form, all projected workforce needs for this project by job classification

As officers and representatives of _____

(Name of contractor)

We, the undersigned, have read and fully agree to the above and become a party to the full implementation of this program.

_____ _____

Title *Date*

_____

Signature

Attachment 1G

Estimated Project Workforce Breakdown

Job Category	Total Estimated Positions	No. of Positions Currently Occupied by Permanent Employees	No. of Vacant Positions	No. of Positions to be Filled With LIPAR (Note 1)*
Officers/Supervisors				
Professionals				
Technicians				
Office				
Clerical				
Trade				
Journeymen				
Apprentices				
Trainees				
Others				
Total				

* Note 1: Lower Income Project Area Residents. Individuals residing within the City/County of _____ whose family income does not exceed 80 percent of the median income in the area.

_____

Company

Attachment 1H

Contract and General Conditions

THIS AGREEMENT, made and entered into this _____ day of _____ 20___, by and between _____, hereinafter called the "Contractor" and the City of Mammoth Spring , hereinafter called the "Owner".

In consideration of the mutual premises and agreements contained herein, the undersigned Contractor and Owner agree as follows:

A. The Contractor shall

1. Furnish all labor, materials, tools, machinery, supervision and services necessary to perform all of the work in accordance with the description of work consisting of all plans, specifications, and supplemental contract documentation, dated July 2021 for work defined in Mammoth Spring, Arkansas, for the sum of $_____.

2. Perform all work timely and diligently in a good and workmanlike manner using approved or equal materials as specified by the Grantee.

3. Begin work within 10 calendar days of receipt of the written Notice to Proceed and shall complete the work within one hundred fifty (150) calendar days thereafter.

4. Carry Worker's Compensation and Employer's Liability Insurance in accordance with the laws of the State of Arkansas for all persons engaged in work at the site; and carry Contractor's Public Liability and Property Damage Insurance and Comprehensive Automobile Liability Insurance.

5. Furnish, before beginning the work, a Certificate of Insurance showing compliance with the provisions of Section A, Paragraph 4 above.

6. Keep the premises clean and orderly during the work and upon substantial completion of the contract, remove all rubbish, tools, scaffolding, and surplus materials from and about the site(s) and leave the work and premises consistent with prior appearance or equivalent. Material and equipment that have been removed and replaced as part of the work shall belong to the contractor.

   Not assign the contract without written consent from the Owner.

8. Guarantee the work performed for a period of twelve months from the date of final acceptance of all work required by this contract. Furthermore, furnish the Owner and the Grantee with all manufacturer's and supplier's written

guarantees and warranties covering materials and equipment furnished under this contract.

9. Furnish the Owner, upon completion of the work and upon final payment by the Owner, a Release of Lien Form certifying that all charges for materials, labor, and/or any other expenses incurred by the Contractor pertaining to the execution of this contract have been paid in full.

10. Defend, indemnify and hold harmless the Owner, the Arkansas Economic Development Commission, their agents or employees from and against any and all claims for injuries or damages to persons or property of any kind or character, whatsoever, whether real or asserted, arising out of the performance of this contract. Furthermore, shall assume all liability and responsibility for injuries, claims or suits for damages, to persons or property of any kind or character, whatsoever, whether real or asserted, arising out of the performance of this contract.

B. **The Owner shall**

1. Not make, or permit to be made, any changes to the description of work, without written approval from the Economic Development Commission.

2. Permit the contractor to use existing utilities such as lights, heat, power and water necessary to carry out and complete the work as specified.

3. Cooperate with the contractor to facilitate the performance of the work.

4. Issue a written Notice to Proceed to the contractor within ten (10) days from the date of this agreement.

C. **Method of Compensation**:

1. Payment for work shall be on percentage complete, plus on-site stored materials minus retainage. Final payment shall be made after: a Certificate of Substantial Completion has been executed; Economic Development Commission has received the contractor's Final Invoice and a satisfactory release of liens, or claims for liens, by subcontractors, laborers and material supplies for completed work or installed materials; and, after a final inspection has been conducted.

2. The contractor shall be liable for and shall pay to the Owner the sum of $500.00 as fixed, agreed and liquidated damages for each calendar day of delay from the above stipulated completion date (Section A, Paragraph 3) or as modified by a properly executed Change Order until such work is satisfactorily completed and accepted by the Owner and Grantee.

D. **General Provisions**:

1. The contractor agrees to perform all contract work as specified, and the Owner agrees that neither he nor the members of his family, his tenants, agents, or employees will hinder the contractor or his work.

2. The contractor shall take affirmative steps to ensure that applicants for employment are not discriminated against in any manner prescribed by the Regulatory Requirements of this contract during employment. Employment activities shall include, but not be limited to employment, upgrading, demotion, or transfer; termination, rates of pay or other forms of compensation; and selection for training, including apprenticeship.

3. The contractor shall post in conspicuous places, for employees and applicants for employment, notices setting forth the provisions, as stated, of the non-discrimination clause contained within the contract's Regulatory Requirements.

4. The contractor shall incorporate the foregoing requirements in all subcontracts.

5. In the event of any breach of this contract by the contractor, the Owner and the Grantee may, at their option, engage the services of another contractor to complete the work and deduct the cost of such completion from any amount due the contractor.

6. This contract embodies all of the representations, rights, duties, and obligations of the parties hereto, and any prior oral or written agreement not embodied herein shall not be binding upon or endure to the benefit of any of the parties.

This Contract and All Terms and Conditions Contained Herein Are Approved and Accepted as of the Date First Above Written.

(Seal)

City of Mammoth Spring

Attest: *(Owner)*

_____ By _____

(Secretary)

_____ Mayor

(Witness) *(Title)*

(Seal)

_____

Attest: *(Contractor)*

_____ By _____

(Secretary)

_____ _____

(Witness) *(Title)*

Attachment 1I

Bonding and Insurance Requirements

1.1 This section defines **ACEDP grant requirements for bonding and insurance**. No other bonding and insurance requirements, unless specified by State law, shall be imposed.

2.1 Entities receiving Federal assistance which involves contracting for construction or facility improvements shall follow State law relating to bid guarantees, performance bonds, and payment bonds except for contracts exceeding $100,000. **For contracts exceeding $100,000, the following minimum bonding requirements shall apply:**

2.1.1 A bid guarantee from each bidder equivalent to 5 percent of the bid price. The **"bid guarantee"** shall consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the bidder will, upon acceptance of his bid, execute such contractual documents as may be required within the time specified.

2.1.2 A **"performance bond"** furnished by the contractor in an amount at least equal to 100 percent of the contract price as security for faithful performance of the contract.

2.1.3 A **"payment bond"** in an amount not less than 100 percent of the contract price or in a penal sum not less than that prescribed by State law, to assure contractor payment of all persons performing labor on the project under this contract and/or furnishing materials and supplies during the execution of this contract.

The performance bond and the payment bond may be in one or in separate instruments in accordance with State law.

3.1 Where bonds are required as per section 2.1 above, the bonds shall be obtained from **acceptable companies** holding certificates of authority within the State of Arkansas.

4.1 **Additional or Substitute Bond** If, at any time, the Owner, for justifiable cause, shall be dissatisfied with any surety or sureties, then upon the Performance or Payment Bonds, the contractor shall within five (5) days after notice of dissatisfaction, substitute an acceptable bond (or bonds) in such form and sum and signed by such other surety or sureties as may be satisfactory to the Owner. The premiums on such bond(s) shall be paid by the contractor. No further payments shall be deemed due nor made until the new surety or sureties furnish acceptable bond(s) to the Owner.

5.1 **Insurance The** contractor shall not commence work under this contract until he has obtained all insurance, as approved by the Owner, required under this paragraph, nor shall the contractor allow any subcontractor to commence work on his subcontract until the subcontractor's required insurance has been obtained and approved.

5.1.1 **Compensation Insurance:** The contractor shall procure and maintain throughout this contract Workmen's Compensation Insurance as required by applicable State law for all of his employees engaged in work at the site of the project under this contract and, in case of any such work sublet, the contractor shall require the subcontractor similarly to provide Workmen's Compensation Insurance for all of the latter's employees engaged in such work unless such employees are covered by the protection afforded by the contractor's Workman's Compensation Insurance. In case any class of employees engaged in hazardous work under this contract is not protected under the Workmen's Compensation Statute, the contractor shall provide and shall cause each subcontractor to provide adequate employer's liability insurance for the protection of his employees as are not otherwise protected.

5.1.2 **Contractor's Public Liability and Property Damage and Vehicle Liability Insurance:** The contractor shall procure and shall maintain during the life of this contract Contractor's Public Liability Insurance, Contractor's Property Damage Insurance and Vehicle Liability Insurance in amounts specified in the contract conditions.

5.1.3 **Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance:** The contractor shall either (1) require each of his subcontractors to procure and to maintain during the life of his subcontract, Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amounts specified in the Supplementary Contract Conditions or, (2) obtain policy insurance on such activities as specified in subparagraph 5.1.2 above.

5.1.4 **Scope of Insurance and Special Hazards:** The insurance required under subparagraphs 5.1.2 and 5.1.3 above shall provide adequate protection for the Contractor and his subcontractors, respectively, against damage claims which may arise from operations under this contract, whether such operations be by the insured or by anyone directly or indirectly employed by him and, also against any of the special hazards, if specified, which may be encountered in the performance of this contract.

5.1.5 **Risk Insurance:** The Owner or contractor may be required to maintain Risk Insurance on a 100 percent completed value basis on the insurable portion of the project (until accepted by the Owner as substantially complete) for the benefit of the Owner, the Contractor, or subcontractors as

their interests may appear. Any requirements pertaining to adequacy of Risk Insurance shall be as per State law.

5.1.6 **Proof of Carriage of Insurance:** The contractor shall furnish the Owner with certificates showing the type, amount, class of operations covered, effective dates and date of expiration of policies. Such certificates shall also 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."

Attachment 1J

Bid Bond

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____
_____ as Principal,
and _____ as Surety,
are hereby held and firmly bound unto the City of Mammoth Spring , as Owner, in the penal sum of _____
for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

Signed, this _____ day of _____, 20___.

The condition of the above obligation is such that whereas the Principal has submitted to the City of Mammoth Spring a certain Bid, attached hereto and hereby made a part hereof to enter into a contract in writing, for the Senior Center
_____
_____

NOW, THEREFORE.

A. If said Bid shall be rejected, or in the alternate,

B. If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract specified (properly completed in accordance with said Bid) and shall furnish a bond for his faithful performance of said contract, and for the payment of all persons performing labor or 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 any 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 the 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.

_____

Surety

_____

Surety's Agent

_____

Principal

Seal

Note: Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570, as amended) as authorized to transact business in Arkansas and have underwriting authority in an amount equal to or greater than the bid amount.

Attachment 1K

Arkansas Statutory Payment and Performance Bond

We

_____,

as Principal, hereinafter called Principal, and _____ authorized to do business in the State of Arkansas, as Surety, hereinafter called Surety, are held and firmly bound unto the City of Mammoth Spring as Obligee, hereinafter called Owner, in the amount of _____ Dollars ($ _____), for the payment whereof Principal and Surety bind themselves, their heirs, personal representatives, successors and assigns, jointly and severally, by these presents.

Principal has by written agreement dated _____ entered into a contract with Owner for the construction of Senior Center , which contract is by reference made a part hereof and hereinafter referred to as the Contract.

THE CONDITION OF THIS OBLIGATION is such that if the Principal shall faithfully perform the Contract on his part and shall fully indemnify and save harmless the Owner from all cost and damage which he may suffer by reason of failure to do so and shall fully reimburse and repay the Owner all outlay and expense which the Owner may incur in making good any such default, and further, that if the Principal shall pay all persons all indebtedness for labor or materials furnished or performed under said Contract, failing which such persons shall have a direct right of action against the Principal and Surety, jointly and severally, under this obligation, subject to the Owner's priority, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

No suit, action or proceeding shall be brought on this bond outside the State of Arkansas. No suit, action or proceeding shall be brought on this bond except by the Owner after six months from the date final payment is made on the Contract, nor shall any suit, action or proceeding be brought by the Owner after two years from the date on which the final payment under the Contract falls due.

Any alterations which may be made in the terms of the Contract, or in the work to be done under it, or the giving by the Owner of any extension of time for the performance of the Contract, or any other forbearance on the part of either the Owner or the Principal to the other shall not in any way release the Principal and the Surety or Sureties, or either or any of them, their heirs, personal representatives, successors or assigns from their liability hereunder, notice to the Surety or Sureties of any such alteration, extension or forbearance being hereby waived.

In no event shall the aggregate liability of the Surety exceed the sum set out herein.

Executed on this _____ day of _____, 20___

_____

Principal

_____

Surety Agent

_____

Attorney-in-Fact

CERTIFICATE OF INSURANCE

TO: Date_____

_____ Project No. _____
Owner

_____ Type of Project_____
Address

THIS IS TO CERTIFY THAT

_____
(Name and address of insured)

is at the date of this certificate, insured by this Company with respect to the business operations hereinafter described, for the types of Insurance and in accordance with the provisions of the standard policies used by this Company, and further hereinafter described. Exceptions to standard policy noted on reverse side hereof.

TYPE OF INSURANCE

	Policy No.	Effective	Expires	Limits of Liability
Workmen's Compensation				
Public Liability				1 Person $ _____ 1 Accident $ _____
Contingent Liability				1 Person $ _____ 1 Accident $ _____
Property Damage				
Builder`s Risk				
Automobile				
Other				

The foregoing Policies (do) (do not) cover all sub-contractors.

Locations Covered: _____

Descriptions of Operations Covered: _____

The above policies either in the body thereof or by appropriate endorsement provide that they may not be changed or cancelled by the insurer in less than five days after the insured has received written notice of such change or cancellation.

Where applicable local laws or regulations require more than five days actual notice of change or cancellation to the assured, the above policies contain such special requirements, either in the body thereof or by appropriate endorsement thereto attached.

_____
(Name of Insurer)

By _____

Title _____

Attachment 1L

Certificate of Owner's Attorney

I, the undersigned, _____, the duly authorized and acting legal representative of City of Mammoth Spring, do hereby certify as follows:

I have examined the attached contract(s) and surety bonds and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon; and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions and provisions thereof.

_____

Attorney Signature

_____

Date

Attachment 1M

General Conditions of the Contract

1.1 Definitions

1.1.1 Contract and Contract Documents

The project to be constructed pursuant to this contract will be financed with assistance from Community Development Block Grant funds and is subject to all applicable Department of Housing and Urban Development (HUD), State and Federal laws.

The plans, specifications, contract documents and any addenda shall form part of this Contract and the provisions thereof shall be as binding upon the parties hereto as if they were incorporated verbatim. The table of contents, titles, headings, 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 infer interpretation of the provisions to which they refer.

1.2 Execution

1.2.1 Six copies of the Contract Documents shall be signed by the Owner and contractor.

1.2.2 Words and abbreviations which have well-known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings.

1.3 Contract Authorization

1.3.1. All original Drawings and Specifications will remain in the ownership of the architect or engineer. Notice and description of any changes to the original documents or scope of work by the contractor shall be communicated to the architect/engineer prior to completion of the affected work.

1.3.2 The Owner, architect/engineer and funding agencies shall have access to the construction site at all times and shall make site visits as necessary to verify project progress.

1.3.3 The architect/engineer shall make, or have made, determinations that the work for each payment request is or is not complete and meets the requirements of the contract documents. The request for payment process shall be defined at the Preconstruction Conference.

1.3.4 The architect/engineer shall have the authority to request corrections to deficient work by notifying the contractor in writing.

1.3.5 The contractor shall meet the requirements of all State, Federal and local laws including, but not limited to those listed in these contract documents as **Regulatory Requirements**.

1.3.6 The architect/engineer shall give all orders and directions under this contract, relative to execution of work including the amount, quality, acceptability, and fitness of the work and materials which are to be paid for under this contract and shall decide all questions which may arise in relation to work and the construction thereof. The architect or engineer's decisions shall be final and conclusive, except as State law may otherwise prescribe. Any differences or conflicts in regard to the contract documents that may arise between the contractor performing work for the architect/engineer shall be adjusted and determined by the architect/owner after consultation with the contractor.

1.3.7 All work and materials, whether incorporated in the work or not, all processes of manufacture, and all methods of construction shall be at all times and places subject to the inspection of the Owner, engineer or architect or representative(s) thereof, who shall adjudge the quality and suitability of the work, materials, processes of manufacture, and methods of construction for the purposes for which they are used. Should they fail to meet their 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/engineer, 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 shall be reduced by such amount adjudged by the architect/engineer as equitable.

1.3.8 No claim for extra work or cost shall be allowed unless authorized by change order executed by the engineer/architect and approved by the Owner and the Economic Development Commission. In the event of temporary suspension of work, or during inclement weather, or whenever the engineer or architect shall direct, the contractor 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/engineer, any work or materials were damaged or injured by reason of failure on the part of the contractor or any of his subcontractors, such materials shall be removed and replaced at contractor expense.

1.3.9 Should the contractor encounter site conditions that differ from the contract documents, he shall immediately give notice to the architect/engineer before commencing work on the affected properties. The architect/engineer will thereupon investigate, or have investigated the conditions, and if found that they materially differ from those shown in the contract documents, will

request changes as deemed necessary. Any increase or decrease of cost resulting from such changes shall be adjusted as per the General Conditions.

2.1 Definitions

2.1.1 The following terms as used in this contract are respectively defined as follows:

2.1.2 **Contractor:** A person, firm or corporation with whom the owner contracts with.

2.1.3 **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.

2.1.4 **Work on (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.

3.1 Contractor's Responsibilities

3.1.1 The contractor shall and will, in good workmanlike manner, complete and perform all work and furnish all supplies, materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary to perform and complete all the work required by this contract. 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 limitations of the contract documents, and complete the entire work to the satisfaction of the engineer/architect and Owner.

It is understood that unless otherwise specifically stated in the contract documents, the contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every kind, and all other services and facilities of every kind whatsoever necessary to execute, complete, and deliver the complete project within the specified time. Any work necessary to be performed after regular working hours, on Sundays or legal Holidays, shall be performed without additional Owner expense.

3.1.2 The contractor shall at all times safe guard the Owner's property from injury or loss in connection with this contract. He shall at all times safe guard and protect his own work, and that of adjacent property from damage. In case

of emergency, which threatens loss or injury of property, and/or safety or life, the contractor will be allowed to act, without previous instructions from the architect/engineer, in a diligent manner. He shall notify the engineer/architect of actions immediately thereafter. Any claim for compensation by the contractor due to such extra work may be submitted to the architect/engineer for approval and Owner for consideration. Where the contractor has not taken action but has notified the architect/engineer of an emergency threatening injury to persons or damage to the work or any adjoining property, he shall act as instructed or authorized by the architect/engineer.

The amount of reimbursement to the contractor on account of any emergency action shall be determined in the manner provided in the general conditions.

3.2 **Contractor Requirements**

The contractor shall

3.2.1 Take every precaution against injuries to persons or damage to property;

3.2.2 Store his apparatus, materials, supplies and equipment in such orderly fashion at the site of the work or elsewhere as will not unduly interfere with the progress of his work or the work of any other contractors;

3.2.3 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;

3.2.4 Before final payment, remove all surplus material, temporary structures, equipment and debris of every nature resulting from his operations, and to put the site in an orderly condition;

3.2.5 Effect all cutting, fitting or patching of his work to conform to the contract documents.

3.2.6 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 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.

3.2.7 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 it is agreed that the right of the 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 of services rendered or materials supplied for the performance of the work called for in this contract.

3.2.8 If, through contractor neglect, any other contractor or subcontractor suffers loss or damage on the work, the contractor agrees to settle with such other parties by agreement or arbitration if such parties will so settle. If such other contractors or subcontractors 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.

3.2.9 Neither the final certificate of payment nor any provision in the contract documents, shall constitute an acceptance of work not completed in accordance with the contract documents or relieve the contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The contractor shall remedy any defects in the work and pay for any damage to other work resulting therefrom, which shall appear within a period of one year from the date of final acceptance of the work unless a longer period is specified. The Owner will give notice of observed defects with reasonable promptness.

3.3 Subcontractor's Responsibilities

3.3.1 The contractor may hire specialty subcontractors to complete work which, under normal contracting practices, is performed by specialty subcontractors, however, the contractor shall be fully responsible to the Owner for the acts or omissions of his subcontractors, and of persons either directly or indirectly employed by him.

3.3.2 The contractor shall coordinate his operations with those of other contractors in the arrangement for storage of materials and in the detailed execution of the work. The contractor, including his subcontractors, shall keep informed of the progress and the detail work of other contractors and shall notify the Owner 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.

3.4 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. License and/or Royalty Fees for the use of a process which is authorized by the Owner must be reasonable, and paid to the holder of the patent, or his authorized licensee, direct by the Owner and not by or through the contractor.

If the contractor uses any design, device or materials covered by letters, patent or copyright, he shall provide for such use by suitable agreement with the holder of such patented or copyrighted design, device or materials. It is mutually understood that, without exception, the contract price 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 infringement 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 obliged to pay by reason of such infringement at any time during the prosecution of the work or after completion of the work.

3.5 Superintendence

At the site of the work, the contractor shall employ a construction superintendent or foreman who shall have full authority to act for the contractor.

3.6 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.

3.7 Arkansas Economic Development Commission Inspection

Authorized representatives of the Arkansas Economic Development Commission shall be permitted to inspect all work, materials, personnel records, invoices of materials, and other data and records of the contractor and his subcontractor(s).

3.8 Payment Provisions

3.8.1 To ensure the proper performance of this contract, the Owner shall retain ten percent (10%) of the amount of each estimate until the project is 50 percent complete. Final retainage shall be released upon acceptance of the Certificate of Substantial Completion.

3.8.2 In preparing payment estimates, materials stored on the site and preparatory work completed may be included.

3.8.3 The contractor agrees to indemnify and hold the Owner harmless from all claims arising from the lawful demands of subcontractors, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies incurred in the performance of this contract. The contractor shall, at the Owner's request, furnish satisfactory evidence that all obligations of the above nature have been paid, discharged, or waived. If the contractor fails to do so, then the Owner may, after having served written notice to the contractor, pay unpaid bills (of which the owner has written notice), and 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. In no event shall the above sentences impose any obligations upon the Owner to the contractor or his surety. In paying any unpaid bills of the contractor, the Owner shall be deemed the contractor's agent, and any such payments made by the Owner shall be considered as payment made under the contract to the contractor and the Owner will not be liable to the contractor for any such payments.

3.8.4 After execution and delivery of the contract prior to making the first partial payment, the contractor shall deliver to the owner an estimated construction progress schedule in a 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 in accordance with the progress schedule. The contractor shall furnish on forms supplied by the Owner a detailed estimate giving a complete breakdown of the contract price and periodic itemized estimates of work completed for the purpose of making partial payments thereon. The costs employed in maintaining these schedules will be used only to determine the basis of partial payments and will not be considered as fixing a basis for additions to or deductions from the contract price.

3.8.5 The contractor shall procure and pay all permits, licenses and approvals necessary for the execution of his contract.

4.1 Changes in Work

No changes in the work defined within the contract documents shall be made without a change order. Charges or credits for the work covered by the change order shall be determined by one or more, or a combination of the following:

- Unit bid prices previously approved
- An agreed upon lump sum
- The actual cost of labor, including foremen
- Materials entering permanently into the work

- The ownership or rental cost of construction plant and equipment during the time of use on the extra work
- Power and consumable supplies for the operation of power equipment
- Insurance, Social Security and unemployment contributions

4.2 **Additional Instructions and Drawings**

If necessary, the contractor will be furnished additional instructions and drawings to execute contract work. These additional drawings and instructions will be prepared so that they can be generally interpreted as part of the contract documents thereof. Any additional instructions or drawings will be issued to and discussed by all parties and shall be carried out by the contractor as specified.

4.3 **Contractor and Owner**

4.3.1 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 completed hereunder, are Essential Conditions of this contract; and it is further mutually understood and agreed that the work to be completed in this contract shall be started on a date to be specified in the "Notice to Proceed."

If the contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension of time granted by the Owner, then the contractor does hereby agree, as a part consideration for the awarding of this contract, to pay to the Owner the amount specified in the contract, not as a penalty, but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the contractor shall be in default after the time stipulated in the contract for completing the work.

Provided, that the contractor shall not be charged with liquidated damages or any excess cost where the Owner determines that the contractor is without fault and the contractor's reasons for the time extension are acceptable to the Owner;

Provided further, that the contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due to;

a. Any preference, priority or allocation order duly issued by the Government;
b. Unforeseeable cause beyond the control and without the fault or negligence of the contractor, including, but not restricted to, acts of God, or 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, and documented severe weather; and,

c. 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 ten (10) 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 the delay, who shall ascertain the facts and extent of the delay and notify the contractor within a reasonable time of its decision in the matter.

4.3.2 Should the Owner be prevented or enjoined from proceeding with work either before or after the start of construction by reason of any litigation or other reason beyond the control of the Owner, the contractor shall not be entitled to make or assert claim for damage by reason of said delay; but time for completion of the work will be extended to such reasonable determination to be set forth in writing.

4.3.3 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 certified or registered mail, to the said contractor at his last given address, or delivered in person to the said contractor or his authorized representative on the work.

5.1 Owner

5.1.1 The Owner is the entity identified in the Owner-Contractor Agreement and is referred to as such in the contract documents. The term Owner means the Owner or his authorized representative.

5.1.2 Prior to the start of construction, the Owner shall obtain all land and rights-of-way necessary for carrying out and completion of work to be performed under this contract. The contractor shall comply with all laws, ordinances, rules, orders, and regulations relating to performance of the work, the protection of adjacent property, and the maintenance of passageways, guard fences or other protective facilities.

5.1.3 Unless otherwise expressly provided for in the contract documents, the Owner will furnish to the contractor all surveys necessary for the execution of the work.

5.1.4 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 contracts or any subcontract 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, attorney, or inspector of or for the Owner who is authorized in such capacity 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 thereof, any material supply contract, subcontract, insurance contract, or any other pertinent contract.

5.1.5 Should any provisions of this contract be violated by the contractor, or 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 shall 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 of 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 the same to completion by contract or by force account at the expense of the contractor and the contractor and his Surety shall be liable to the Owner for any excess cost occasioned the Owner thereby, and in such event the Owner may take possession of and utilize in completing the work, such materials, appliances, and plant as may be on the site of the work and necessary therefore.

5.1.6 The Owner shall meet the requirements of all State, Federal and local laws including but not limited to those listed in these contract documents as Regulatory Requirements.

6.1 Safety Standards and Accident Prevention

With respect to all work performed under this contract, the contractor shall:

6.1.1 Comply with the safety standards provisions of applicable laws, building and construction codes and the Manual of Accident Prevention in Construction: published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act (OSHA) of 1970 (Public Law 91-596) and the requirements of Title 29 of the Code of Federal Regulations, Section 1518, as published in the Federal Register, Volume 36, Number 75, Saturday, April 17, 1971, and specifically, OSHA's Standard for Excavation and Trenches Safety Systems, 29 CFR Part 1926, Subpart P.

6.1.2 Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) and property.

6.1.3 Maintain, at his office or other conspicuous place at the job site, all articles necessary for giving first aid to the injured, and shall make standing arrangements for the immediate removal to a hospital or a doctor's care of persons (including employees), who may be injured on the job site.

7.1 Miscellaneous Provisions

7.1.1 The architect/engineer shall review all submittals to include but not be limited to samples, shop drawings and product data. The architect/engineer shall provide the contractor with approved or rejected submittals within ten days of their receipt. The contractor shall retain one copy in his construction files at all times and provide one copy to the resident project representative. Upon completion of the contract, the contractor shall provide the complete submittal file to the owner who will retain them in the permanent construction file. Upon receiving a rejected submittal, the contractor shall resubmit an alternate or provide what was originally specified.

7.1.2 The contractor shall insert in any subcontracts the Federal Labor Standards Provisions Contained herein (See Regulatory Requirements) and such other clauses as the Economic Development Commission may deem necessary, and also, a clause requiring subcontractors to include these clauses in any lower tier subcontracts which they may enter into, together with a clause requiring this insertion in any further subcontracts that may in turn be made.

7.1.3 The contractor may agree to the use and occupancy of a portion or unit of the project before formal acceptance by the owner provided that the owner secures written consent of the contractor, except in the event, in the opinion of the architect/engineer, the contractor is chargeable with unwarranted delay in final cleanup of punch list items or other contract requirements. Also, an endorsement of the insurance-carrier and consent of the surety permitting occupancy of the building or use of the project during the remaining period of construction must be secured.

7.1.4 All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with accepted standards. The laboratory or inspection agency shall be selected by the owner (in accordance with State procurement requirements) who will pay for all such services direct and exclusive to this contract. Materials of construction, particularly those upon which the strength and durability of the structure may depend, shall be subject to inspection and testing to establish conformance with specifications and suitability for uses intended.

7.1.5 The architect/engineer shall provide a qualified resident observer to be on site at all times when the contractor, subcontractor and workmen are working. The resident observer shall represent the engineer/architect by verifying that the requirements of the contract documents are met but will also represent the owner by verifying that those requirements are met and that the work is completed in a manner to assure that the construction means, methods and techniques represent the best interests of the owner. The resident observer shall be responsible to check the quality and quantities of work and report immediately any discrepancies to the engineer/architect.

7.1.6 A separate lump sum bid item must be included for Excavation/Trench Safety System (for excavation in excess of five feet). The bidder is required to complete this pay item in accordance with Act 291 of the Arkansas 79th General Assembly.

7.1.7 In the event a bidder fails to complete this pay item, the Owner shall declare that the bid fails to comply fully with the provisions of the contract documents and will be considered invalid as a nonresponsive bid. Payment for the lump sum bid item for Excavation/Trench Safety System will be paid at the completion of the contract. No partial payments will be allowed.

Attachment 1N

Supplemental Conditions of the Contract

8.1 Special Hazards

The contractor's and his subcontractor's Public Liability and Property Damage Insurance shall provide adequate protection against the following special hazards:

8.1.1 **Contractor's and Subcontractor's Public Liability, Vehicle Liability and Property Damage Insurance.** As required in the General Conditions, the Contractor's Public Liability Insurance and Vehicle Liability Insurance shall be in an amount not less than $2,000,000.00 for injuries, including accidental death, to any one person, and subject to the same limit for each person, in an amount not less than $1,000,000.00 on account of one accident, and Contractor's Property Damage Insurance in an amount not less than $1,000,000.00.

8.1.2 The Contractor shall either require each of his subcontractors to procure and to maintain during the life of his subcontract, Subcontractor's Public Liability and Property Damage of the type and in the same amounts as specified in the preceding paragraph, or insure the activities of his subcontractors in his own policy.

8.1.3 The contract documents shall consist of all specifications, plans, contract documents and addenda for the project.

9.1 Supplementary Contract Conditions

Any supplementary conditions of the contract must be inserted below:

NONE.

Attachment 1O

Wage Determination Preface Sheet

(The appropriate Wage Determination(s) requested from the Arkansas Economic Development Commission shall be inserted in place of this page.)

Note: Please contact the Arkansas Economic Development Commission or project administrator, ten (10) days before the date of bid opening to confirm that the issued wage determination(s) is still valid. Modified or superseded wage determinations must be added to the contract.

"General Decision Number: AR20210021 01/01/2021

Superseded General Decision Number: AR20200021

State: Arkansas

Construction Type: Building
BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Counties: Clay, Cross, Fulton and Jackson Counties in Arkansas.

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.95 for calendar year 2021 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, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.95 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 calendar year 2021. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/01/2021

ENGI0624-006 01/01/2017

	Rates	Fringes
POWER EQUIPMENT OPERATOR		

Crane	$ 26.20	12.30
Forklift	$ 26.20	12.30

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* IRON0321-010 08/01/2020

	Rates	Fringes
IRONWORKER, STRUCTURAL	$ 22.00	19.26

PAIN0424-008 07/01/2019

	Rates	Fringes
PAINTER (Spray)	$ 16.10	6.97

SHEE0036-035 06/01/2015

	Rates	Fringes
SHEET METAL WORKER (HVAC Duct Installation Only)	$ 22.64	13.35

SUAR2015-018 01/09/2017

	Rates	Fringes
BRICKLAYER	$ 19.15	0.00
CARPENTER, Includes Drywall Hanging	$ 17.20	0.00
CEMENT MASON/CONCRETE FINISHER	$ 21.08	0.00
ELECTRICIAN	$ 21.95	6.36
LABORER: Common or General	$ 11.12	0.00
LABORER: Mason Tender - Brick	$ 12.32	0.00
OPERATOR: Backhoe/Excavator/Trackhoe	$ 23.08	0.00
OPERATOR: Bulldozer	$ 18.14	0.00
PAINTER (Brush and Roller)	$ 15.68	0.00
PLUMBER	$ 19.72	3.49
SPRINKLER FITTER (Fire Sprinklers)	$ 21.77	2.46

TRUCK DRIVER: Dump Truck.....$ 15.00 0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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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 www.dol.gov/whd/govcontracts.

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 Regional Office for the area in which the survey was conducted because those Regional Offices have 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 DECISION
"

Form 64
Verification of Grantee, Contractor and Professional Services Eligibility Form

Grantee Name: _____ ACEDP Project Number: 790-0_____

In accordance with the General Service Administration's (GSA) Office of Government wide Policy, Cities, Counties, Contractors and Professional Service providers MUST be registered with the System for Award Management (SAM) **prior to obtaining a contract** and/or agreement with a project receiving Federal and/or State funding. The System for Award Management (*previously known as CCR-Central Contractor Registration*) is a database that is used to collect, validate, store and disseminate data in support of Federal and State agency contracts and assistance awards.

SAM registrants must provide basic information relevant to procurement and financial transactions in order to complete their registration. Registrants must update or renew their registration at least once a year to maintain an active status. An active status must be maintained for the life of the contract and/or agreement.

In order to register with SAM, you must have a Data Universal Numbering System (DUNS) number. There is **NO CHARGE** for obtaining a DUNS number or for registering in SAM. A DUNS number can be obtained at www.dnb.com or call 800-424-2495. SAM has a **FREE** online registration process that can be accessed at www.sam.gov.

Verification of the City's, County's, Contractor's and/or Professional Services Provider's active SAM registration must be obtained prior to execution of all agreements and contracts. If you have questions or need additional information, please go to the SAM website or call the Federal Service Desk at 866-606-8220. You may also contact your Grant Administrator for additional assistance. **Attach printout of SAM eligibility.**

NOTE: Verification that you are registered and active in SAM.gov MUST be presented at the Pre-Construction Conference or the Notice to Proceed will not be issued.

Attachment 1P

Architect's Certification of Compliance with Minimum Standards for Access by Handicapped

ACEDP Project Number: 790-09129-19

Project Name: Senior Center

City/County, State: City of Mammoth Spring, Arkansas

Pursuant to the requirements of the Architectural Barriers Act of 1968, 42 USC 4151, and the regulations issued subsequent thereto, including the Americans with Disability Act, the undersigned certifies that the design of the above-referenced project is in conformance with the minimum standards contained in the American Standard Specifications for Making Buildings and Facilities Accessible To and Usable By the Physically Handicapped, Number A-117.1R-1971 (as modified by 41 CFR 101-19.603).

Name and Address of Project Architect:

_____

_____

_____

Registration Number: _____

Signature: _____

Typed Name: _____

Date: _____

Attachment 1Q

Regulatory Requirements

1.1 Interest of Member or Delegate to Congress

No member of or Delegate to Congress, or Resident Commissioner, shall be a party to or benefit from this contract, except that provisions of this clause shall not extend to situations where the contract accrues to a corporation for its general benefit.

1.2 Equal Employment Opportunity

1.2.1 During the performance of this contract the contractor agrees as follows:

The contractor will not discriminate against any employee or applicant for employment because of age, race, religion, sex, color, handicap, veteran status or national origin. The contractor will take affirmative steps to ensure that applicants are employed, and that employees are treated during employment, without regard to their age, race, religion, sex, color, handicap, veteran status 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 or compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

1.2.2 The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to age, race, religion, sex, color, handicap, veteran status or national origin.

1.2.3 The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the labor union or workers representative of the contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965 (EO 11246), and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

1.2.4 The contractor will comply with all provisions of EO 11246, and of the rules, regulations, and relevant orders of the Secretary of Labor.

1.2.5 In the event of the contractor's noncompliance with the nondiscrimination 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 Government contracts or Federally-assisted construction contracts.

1.2.6 The contractor will include the provisions of these paragraphs in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of EO 11246, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the Economic Development Commission and HUD may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by HUD, the contractor may request the United States to enter into such litigation to protect its interests.

1.3 **Employment Practices**

The contractor shall

1.3.1 To the greatest extent practicable, follow hiring and employment practices for work on the project, which will provide new job opportunities for the unemployed and underemployed (Section 3 requirements).

1.3.2 Insert or cause to be inserted the same provisions in each construction subcontract.

2.1 **Special Equal Opportunity Provisions**

2.1.1 **Activities and Contracts Not Subject to EO 11246, as Amended** (Applicable to Federally assisted construction contracts and related subcontracts *under $10,000*). During the performance of this contract, the contractor agrees to incorporate the following requirements into all subcontracts:

2.1.1.1 The contractor shall not discriminate against any employee or applicant for employment because of age, race, religion, sex, color, handicap, veteran status or national origin. The contractor shall take affirmative steps to ensure that applicants for employment are employed, and that employees are treated during employment, with regard to their age, race, religion, sex, color, handicap, veteran status or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

2.1.1.2 The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided, setting forth the provision of this nondiscrimination clause. The notice shall state that all qualified applicants will receive consideration for employment without regard to age, race, religion, sex, color, handicap, veteran status or national origin.

2.2.1 **Contracts Subject to EO 11246, as Amended** (Applicable to Federally assisted construction contracts and related subcontracts *exceeding $10,000*). During the performance of this contract, the contractor agrees as follows:

2.2.1.1 The contractor will not discriminate against any employee or applicant for employment because of age, race, religion, sex, color, handicap, veteran status or national origin. The contractor will take affirmative steps to ensure that applicants are employed, and that employees are treated during employment, without regard to their age, race, religion, sex, color, handicap, veteran status or national origin, Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

2.2.1.2 The contractor will in all solicitations or advertisements for employees placed by or on his behalf, state that all qualified applicants will receive consideration for employment without regard to age, race, religion, sex, color, handicap, veteran status or national origin.

2.2.1.3 The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the labor union or workers' representatives of the contractor's commitments under this section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

2.2.1.4 The contractor will comply with all provisions of EO 11246, and of the rules, regulations and relevant orders of the Secretary of Labor.

2.2.1.5 The contractor will furnish all information and reports required by EO 11246, and by the rules, regulations, and orders of the

Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the Arkansas Economic Development Commission, HUD, and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

2.2.1.6 In the event of the contractor's noncompliance with the nondiscrimination 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 Government contracts or Federally-assisted construction contracts.

2.2.1.7 The contractor will include all provisions of the seven paragraphs immediately above in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of EO 11246, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the Division may direct as a means of enforcing such provisions, including sanctions for noncompliance provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Division, the contractor may request the United States to enter into such litigation to protect its interests.

"Section 3" Compliance in the Provision of Training, Employment and Business Opportunities

3.1.1 During the performance of this contract, the contractor agrees as follows:

3.1.1.1 The contractor agrees to comply with the requirements of Section 3 of the Housing and Urban Development Act of 1968, 12 USC 170 (u), as amended, the HUD regulations issued pursuant thereto at 24 CFR 135, and any applicable rules and orders of HUD issued thereunder.

3.1.1.2 The "Section 3 clause" set forth in 24 CFR 135.20 (b) shall form part of this contract, as set forth in the General Conditions.

3.1.1.3 Contractors shall incorporate the "Section 3 clause" shown below and the foregoing requirements in all subcontracts.

Section 3 Clause as Set Forth in 24 CFR 135.20(b)

The work to be performed under this contract is on a project funded with Federal financial assistance from HUD and is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 170(u). Section 3 requires that to the greatest extent feasible, opportunities for training and employment will be given to lower income residents of the project area and, contracts for work in connection with the project be awarded to business concerns which are located in or substantially owned by persons residing in the project area.

The parties to this contract will comply with the provisions of Section 3 and the regulations issued pursuant thereto by the Secretary of HUD set forth in 24 CFR 135, and all applicable rules and orders of the Division issued there under prior to the execution of this contract. The parties to this contract certify and agree that they are under no contractual or other disability, which would prevent them from complying with these requirements.

The contractor will send to each labor organization or workers' representative with which he has a collective bargaining agreement or other contract or understanding, a notice advising them of his commitments under Section 3 and will post copies of the notice in conspicuous places available to employees and applicants for employment or training.

The contractor will include this Section 3 clause in every subcontract for work in connection with the project and will, at the direction of the applicant for or recipient of Federal financial assistance, take appropriate action pursuant to the subcontract upon a finding that the subcontractor is in violation of regulations issued by HUD, 24 CFR 135. The contractor will not subcontract with any subcontractor where it has notice or knowledge that the latter has been found in violation of regulations under 24 CFR 135, and will not let any subcontract unless the subcontractor has first provided it with a preliminary statement of ability to comply with the requirements of these regulations.

Compliance with Section 3 provisions, the regulations set forth in 24 CFR 135, and all applicable rules and orders of the Division issued there under prior to the execution of the contract, shall be a condition of the Federal financial assistance provided to the project, binding upon the applicant or recipient for such assistance, its successors and assigns. Failure to fulfill these requirements shall subject the applicant or recipient, its contractors and subcontractors, its successors, and assigns to those sanctions specified by the grant or loan agreement or contract through which Federal assistance is provided, and to such sanctions as are specified by 24 CFR 135.

4.1 **Access to Records/Maintenance of Records**

The contractor shall maintain accounts and records, including personnel, property, and financial records, adequate to identify and account for all costs pertaining to the contract and such other records as may be deemed necessary by the locality to assure proper accounting for all funds. These records will be available for audit purposes to the locality or the State or any other authorized representative, and will be retained for three years after contract completion. Moreover, the locality, State, or any authorized representative shall have access to any books, documents, papers, and records of the contractor which are directly pertinent to this contract for the purpose of making audit, examination, excerpts, and transcriptions.

5.1 **Conflict of Interest of Officers or Employees of the Local Jurisdiction, Members of the Local Governing Body, or Other Public Officials**

No officer or employee of the local jurisdiction or its designees or agents, no member of the governing body, and no other public official of the locality who exercises any function or responsibility with respect to this contract, during his/her tenure or for one year thereafter, shall have any interest, direct or indirect, in any contract or subcontract, or the proceeds thereof, for work to be performed. Further, the contractor shall cause to be incorporated in all subcontracts the language set forth in this paragraph prohibiting conflict of interest.

6.1 **Section 503 of the Rehabilitation Act of 1973 (If $2,500 or Over)**

6.1.1 The contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. The contractor agrees to take affirmative steps to employ, advance in employment and otherwise treat qualified handicapped individuals without discrimination based upon their physical or mental handicap in all employment practices such as the following: employment upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship.

6.1.2 The contractor agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.

6.1.3 In the event of the contractor's noncompliance with the requirements of this clause, actions for noncompliance may be taken in accordance with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.

6.1.4 The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices stating the contractor's obligation under the law to take affirmative steps to employ and advance in

employment qualified handicapped employees and applicants for employment, and the rights of applicants and employees.

6.1.5 The contractor will notify each labor union or representative of workers with which it has a collective bargaining agreement of other contract understanding, that the contractor is bound by the terms of Section 503 of the Rehabilitation Act of 1973, and is committed to take affirmative steps to employ and advance in employment physically and mentally handicapped individuals.

6.1.6 The contractor will include the provisions of this clause in every subcontract or purchase order of $2,500 or more unless exempted by rules, regulations, or orders of the Secretary issued pursuant to Section 503 of the Act, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the Director of the office of Federal Contract Compliance Programs may direct to enforce such provisions, including action for noncompliance.

7.1 Section 402 Veterans Readjustment Assistance Act of 1973 (If $10,000 or Over)

7.1.1 Affirmative Steps for Disabled Veterans and Veterans of the Vietnam Era

7.1.1.1 The contractor will not discriminate against any employee or applicant for employment because he or she is a disabled veteran or veteran of the Vietnam era in regard to any position for which the employee or applicant for employment is qualified. The contractor agrees to take affirmative steps to employ, advance in employment and otherwise treat qualified disabled veterans and veterans of the Vietnam era without discrimination based upon their disability or veteran status in all employment practices such as the following: employment upgrading, demotion or transfer, recruitment, advertising, layoff or termination, and selection for training, including apprenticeship.

7.1.1.2 The contractor agrees that all suitable employment openings which exist at the time the contract is executed and those which occur during the performance of this contract (including those not generated by this contract and including those occurring at an establishment of the contractor other than the one wherein the contract is being performed but excluding those of independently operated corporate affiliates) shall be listed at an appropriate local office of the State employment service system wherein the opening occurs. The contractor further agrees to provide reports to local

offices regarding employment openings and hires as may be requested.

7.1.1.3 State and local government agencies holding Federal contracts of $10,000 or more shall also list all their suitable openings with the appropriate office of the State employment service.

7.1.1.4 Listing of employment openings with the employment service system pursuant to this clause shall be made at least concurrently with the use of any other recruitment source or effort and shall involve the normal obligations which attach to the placing of a bona fide job order, including the acceptance of referrals of veterans and non-veterans. The listing of employment openings does not require the hiring of any particular job applicant or selection from any particular group of job applicants, and nothing herein is intended to relieve the contractor from any requirements in Executive Orders or regulations regarding nondiscrimination in employment.

7.1.1.5 The reports required in regard to this clause shall include, but not be limited to, periodic reports which shall be filed at least quarterly with the appropriate local office, or where the contractor has more than one hiring location in a State, with the central office of that State employment service. Such reports shall indicate for each hiring location (1) the number of individuals hired during the reporting period, (2) the number of nondisabled veterans of the Vietnam era hired, (3) the number of disabled veterans of the Vietnam era hired, and (4) the total number of disabled veterans hired for on-the-job training under 38 U.S.C. 1787. The contractor shall submit a report within 30 days after the end of each reporting period wherein any performance is made of this contract identifying data for each hiring location. The contractor shall maintain at each hiring location copies of the reports submitted until the expiration of one year after final payment under the contract, during which time these reports and related documentation shall be made available, upon request, for examination by any authorized representative of the contracting officer for of the Secretary of Labor. Documentation would include personnel records respecting job openings, recruitment and placement.

7.1.1.6 Whenever the contractor is subject to the listing provisions of this clause, it shall advise the employment service system in each State where it has establishments of the name and location of each hiring location in the State. As long as the contractor is subject to these provisions and has so advised the State system, there is no need to advise them of subsequent contracts. The contractor may inform the State system when it is no longer bound by this contract clause.

7.1.1.7 This clause does not apply to the listing of employment openings occurring and filled outside the 50 States, the District of Columbia, Puerto Rico, Guam and the Virgin Islands.

7.1.1.8 The provisions of this clause do not apply to openings, which the contractor proposes to fill from within his own organization or to fill pursuant to a customary and traditional employer-union firing arrangement. This exclusion does not apply to a particular opening since an employer decides to consider applicants outside of his own organization or employer-union arrangement for that opening.

7.1.1.9 The phrase "All suitable employment openings" includes, but is not limited to, openings which occur in the following job categories; production and nonproduction; plans and office; laborers and mechanics; supervisory and nonsupervisory; technical; and executive administrative and professional openings compensated on a salary basis of less than $25,000 per year. This term includes full-time employment, temporary employment of more than 3 days' duration, and part-time employment. It does not include openings which the contractor proposes to fill from within his own organization or to fill pursuant to a customary and traditional employer-union hiring arrangement nor openings in an educational institution which are restricted to students of the institution. Under the most compelling circumstances, an employment opening may not be suitable for listing, including such situations where the needs of the Government cannot reasonably be otherwise supplied, where listing would be contrary to national security, or where the requirement of listing would otherwise not be for the best interest of the Government.

7.1.1.10 "Appropriate office of the State employment service system" means the local office of the Federal-State national system of public employment offices with assigned responsibility for serving the area where the employment openings are to be filled, including the District of Columbia, Guam, Puerto Rico, and the Virgin Islands.

7.1.1.11 "Openings which the contractor proposes to fill from within his own organization" means employment openings for which no consideration will be given to persons outside the contractor's organization (including any affiliates, subsidiaries, and the parent companies) and includes any openings which the contractor proposes to fill from regularly established "recall" lists.

7.1.1.12 "Openings, which the contractor proposes to fill pursuant to a customary and traditional employer-union, hiring arrangement,"

means employment openings, which the contractor proposes to fill from union halls, which is part of the customary and traditional hiring relationship, which exists between the contractor and representative of his employees.

7.1.1.13 The contractor agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.

7.1.1.14 In the event of the contractor's noncompliance with the requirements of this clause, actions for noncompliance may be taken in accordance with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.

7.1.1.15 The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices in a form to be prescribed by the Director, provided by or through the contracting officer. Such notices shall state the contractor's obligation under the law to take affirmative steps to employ and advance in employment qualified disabled veterans and veterans of the Vietnam era for employment, and the rights of applicants and employees.

7.1.1.16 The contractor will notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding, that the contractor is bound by the terms of the Vietnam Era Veterans Readjustment Assistance Act, and is committed to take affirmative steps to employ and advance in employment qualified disabled veterans and veterans of the Vietnam Era.

7.1.1.17 The contractor will include the provisions of this clause in every subcontract or purchase order of $10,000 or more unless exempted by rules, regulations, or orders of the Secretary issued pursuant to the Act, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the Director of the Office of Federal Contract Compliance Programs may direct to enforce such provisions, including action for noncompliance.

8.1 Section 109 of the Housing and Community Development Act of 1974

8.1.1 No person in the United States shall on the ground 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 this title.

8.1.2 Whenever the Secretary of HUD determines that a State or unit of general local government which is a recipient of assistance under this title has failed to comply with subsection 8.1.1 or an applicable regulation, he shall notify the Governor of such State or the chief executive officer of such unit of local government of the noncompliance and shall request the Governor or the chief executive officer to secure compliance. If within a reasonable period of time, not to exceed sixty days, the Governor or the chief executive officer fails or refuses to secure compliance, the Secretary is authorized to (1) refer the matter to the Attorney General with a recommendation that an appropriate civil action be instituted; (2) exercise the powers and functions provided by Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d); (3) exercise the powers and functions provided for in section 111 (a) of this Act; or (4) take such other action as may be provided by law.

8.1.3 When a matter is referred to the Attorney General pursuant to above, or whenever he has reason to believe that a State government or unit of general local government is engaged in a pattern or practice in violation of the provisions of this section, the Attorney General may bring a civil action in any appropriate United States court for such relief as may be appropriate, including injunctive relief.

9.1 Civil Rights Act of 1964

9.1.1 Under Title VI of the Civil Rights Act of 1964, no person shall, on the grounds of race, color, sex, or national origin, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving Federal financial assistance. Subsequent civil rights legislation has extended nondiscrimination to classes based on age and handicap.

10.1 Certification of Compliance with Air and Water Acts

(Applicable to Federally-assisted construction contracts and related subcontracts **exceeding $100,000)**

10.1.1 During the performance of this contract, the contractor and all subcontractors shall comply with the requirements of the Clean Air Act, as amended, 42, USC 1857 et seq., the Federal Water Pollution Control Act, as amended, 33 USC 1251 et seq., and the regulations of the Environmental Protection Agency with respect thereto, at 40 CFR 15, as amended.

10.1.2 In addition to the foregoing requirements, all nonexempt contractors and subcontractors shall furnish to the owner, the following:

A stipulation by the contractor or subcontractors, that any facility to be utilized in the performance of any nonexempt contact or subcontract, is not listed on the List of Violating Facilities issued by the Environmental Protection Agency (EPA) pursuant to 40 CFR 15.20.

Agreement by the contractor to comply with all the requirements of Section 114 of the Clean Air Act, as amended, (42 USC 1857 c-8) 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 Section 114 and Section 308, and all regulations and guidelines issued thereunder.
A stipulation that as a condition of contract award, prompt notice will be given of any notice received from the Director, Office of Federal Activities, EPA, indicating that a facility utilized, or to be utilized for the contract, is under consideration to be listed on the EPA List of Violating Facilities.

Agreement by the contractor that he will include, or cause to be included, the criteria and requirements in 10.1.2.1 to 10.1.2.4 of this section in every subcontract and requiring that the contractor take enforcement action as the Government

11.1 Hazards, Safety Standards and Accident Prevention

11.1.2 Use of Explosives

11.1.2.1 When the use of explosives is necessary for the prosecution of the work, the contractor shall observe all local, State and Federal laws in purchasing and handling explosives and take all necessary precaution to protect completed work, neighboring property, waterlines, or other underground structures. Where there is danger to structures or property from blasting, the charges shall be reduced and the material covered with suitable timber, steel or rope mats. The contractor shall notify all owners of public utility property of intention to use explosives at least 8 hours before blasting is done, close to such property.

11.1.3 Danger Signals and Safety Devices (Modify as Required)

11.1.3.1 The contractor shall take all necessary precautions to guard against damages to property and injury to persons. He shall put up and maintain in good condition, sufficient red or warning lights at night, suitable barricades and other devices necessary to protect the public. In case the contractor fails or neglects to take such precautions, the Owner may have such lights and barricades installed and charge the cost of this work to the contractor. Such action by the Owner does not

relieve the contractor of any liability incurred under these specifications or contract.

12.1 **Or Equal Clause**

Whenever a material, article or piece of equipment is identified on the plans or specifications by reference to manufacturers' or vendors' names, trade names, catalogue numbers, etc., it is intended merely to establish a standard; and any material, article, or equipment of other manufacturers and vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article, or equipment so proposed, meets State plumbing requirements as equal in substance or structure.

FEDERAL LABOR STANDARDS PROVISIONS

U.S. Department of Housing and Urban Development
Office of Labor Relations Previous editions are obsolete
Form **HUD-4010** (06/2009) ref. Handbook 1344.1

Applicability
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 following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

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 than 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 hereto and made a part hereof, 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 l(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 for the time actually worked 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 and 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 therefor 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 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 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 1215-0140.)

(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 Previous editions are obsolete Page 2 of 5 form **HUD-4010** (06/2009) ref. Handbook 1344.1 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 Federally-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 of 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 and 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 l(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 l(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to 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 or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of 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) except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at *http://www.dol.gov/esa/whd/forms/wh347instr.htm* or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request 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 contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this subparagraph for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to HUD or its designee. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149.)

(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 or 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 provided under 29 CFR 5.5 (a)(3)(ii), the appropriate information is being 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 helper, 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 performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her 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 on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the 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 stated 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 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. 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 the 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 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 in 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 1 01 0, Title 18, U.S.C., "Federal Housing Administration transactions", provides 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 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 such laborer or mechanic in any workweek in which the individual 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 therefor 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 violation 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 sub paragraph (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 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 his 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, (Public Law 91-54, 83 Stat 96). 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 subcontractor as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

Attachment 1R

Enumeration of Plans, Specifications and Addenda

Following are the Plans, Specifications and Addenda which form a part of this contract, as set forth in the General Conditions, "Contract and Contract Documents":

Plans/Drawings

General Construction: Nos. _____

Heating and Ventilating: " _____

Plumbing: " _____

Electrical: " _____

Other (_____) ." _____

Other (_____) ." _____

Specifications

General Construction: Page _____ to _____, incl.

Heating and Ventilating: " _____ to _____, incl.

Plumbing: " _____ to _____, incl.

Electrical: " _____ to _____, incl.

Other (_____) " _____ to _____, incl.

Other (_____) " _____ to _____, incl.

Addenda

No. _____ Date _____ No. _____ Date _____

No. _____ Date _____ No. _____ Date _____

STATED ALLOWANCES

Pursuant to the General Conditions, the contractor shall include the following cash allowances in his proposal:

For _____ (Page ___ of Specifications) $ _____

For _____ (Page ___ of Specifications) $ _____

For _____ (Page ___ of Specifications) $ _____

For _____ (Page ___ of Specifications) $ _____

For _____ (Page ___ of Specifications) $ _____

For _____ (Page ___ of Specifications) $ _____

Special Hazards

The Contractor's and his Subcontractor's Public Liability and Property Damage Insurance shall provide adequate protection against the following special hazards:

NONE

Contractor's and Subcontractor's Public Liability, Vehicle Liability and Property Damage Insurance

As required in the General conditions, the Contractor's Public Liability Insurance and Vehicle Liability Insurance shall be in an amount not less than $2,000,000.00 for injuries, including accidental death, to any one person, and subject to the same limit for each person, in an amount not less than $1,000,000.00 on account of one accident, and Contractor's Property Damage Insurance in an amount not less than $1,000,000.00.

The Contractor shall either require each of his subcontractors to procure and to maintain during the life of his subcontract, Subcontractor's Public Liability and Property Damage of the type and in the same amounts as specified in the preceding paragraph, or insure the activities of his subcontractors in his own policy.

Photographs of Project

As provided in the General Conditions, the Contractor will furnish photographs in the number, type, and stage as enumerated below:

Schedule of Occupational Classifications and Minimum Hourly Wage Rates as Required in the General Conditions

Given on Pages _____, _____ and _____.

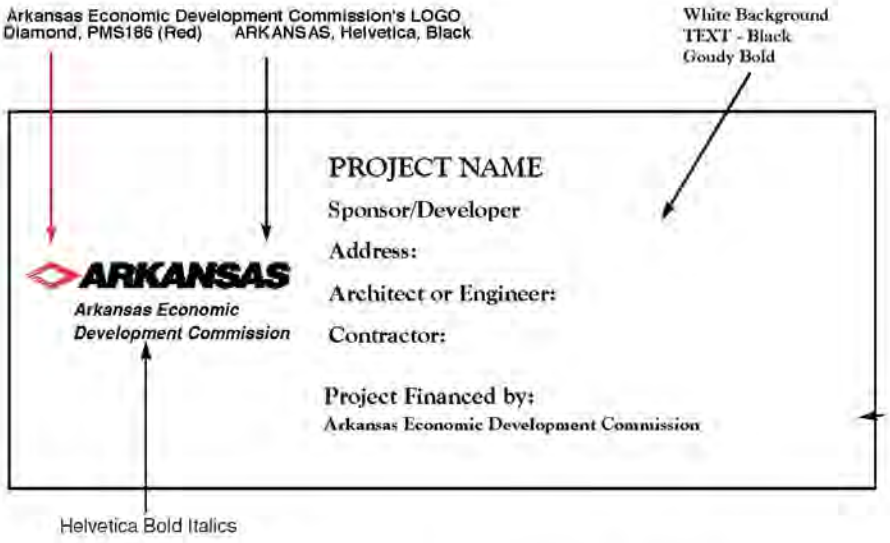
Builder's Risk Insurance

As provided in Bonds and Certificates, the Contractor will maintain Builder's Risk Insurance (fire and extended coverage) on a 100 percent completed value basis on the insurable portions of the project for the benefit of the Owner, the Contractor, and all subcontractors, as their interests may appear.

Attachment 1S

Technical Specifications of the Contract

Any technical specification of the contract, so desired by the Owner, in addition to the preceding specified contract documents shall be entered below.



SIGN DIMENSIONS: Approximately 4' x 8' x 3/4" * PLYWOOD PANEL (APA Rated A/B grade exterior)

Form 121
Attachment 1U
Certificate of Compliance for the 2014 Arkansas Energy Code
Design Professional

I, the undersigned, _____, the duly authorized licensed design professional of record for the _____, located at _____, in _____, Arkansas, certify that the aforementioned building is designed to meet and or exceed the minimum requirements of the 2014 Arkansas Energy Code * and building specifications, based on the requirements, have been provided to me by the licensed design professional(s) of record.

_____
Signature

_____
License Number

_____
Date

_____
Stamp

Per legislative authority provided by in Section 3(B)(2)(c) of Act 7 of 1981

For information regarding the specifications and requirements of the 2014 Arkansas Energy Code, contact the Arkansas Energy Office at 1-800-558-2633 or find related materials and resources at www.arkansasenergy.org .

Form 122
Attachment 2U
Certificate of Compliance for the 2014 Arkansas Energy Code
Builder/Contractor

I, the undersigned, _____, the duly authorized licensed builder/contractor of record for the _____, located at _____, in _____, Arkansas, certify that the aforementioned building is designed to meet and or exceed the minimum requirements of the 2014 Arkansas Energy Code * and building specifications, based on the requirements, have been provided to me by the licensed contractor/builder(s) of record.

_____
Signature

_____
License Number

_____
Date

Per legislative authority provided by in Section 3(B)(2)(c) of Act 7 of 1981

For information regarding the specifications and requirements of the 2014 Arkansas Energy Code, contact the Arkansas Energy Office at 1-800-558-2633 or find related materials and resources at www.arkansasenergy.org .

Form 123
Attachment V
DISCLOSURE REQUIRED BY EXECUTIVE ORDER 98-04

Contracts and Grants

Any contract or amendment to a contract or any grant executed by an agency which exceeds $25,000 shall require the contractor to disclose information as required under the terms of Executive Order 98-04 and the Regulations pursuant thereto.

Any individual contracting with the State of Arkansas shall disclose if he or she is a current or former: member of the general assembly, constitutional officer, board or commission member, state employee, or the spouse or immediate family of any of the persons as described herein.

Any entity contracting with the State of Arkansas shall disclose

(a) any position of control, or

(b) any ownership interest of 10% or greater

that is held by a current or former: member of the general assembly, constitutional officer, board or commission member, state employee, or the spouse or immediate family of any of the persons as described herein.

Disclosure by Sub-contractor or Assignee

Any sub-contractor or assignee (hereinafter "Third Party") shall disclose whether such Third Party is a current or former: member of the general assembly, constitutional officer, board or commission member, state employee, or the spouse or immediate family member of any of the persons as described herein, or if any of the persons here described in this sentence hold any position of control or ownership interest of 10% or greater in the Third Party. This disclosure requirement shall apply during the entire term of the contract or grant, without regard to whether the subcontract or assignment is entered into prior or subsequent to the date of contract or grant.

Failure to Disclose and Violations

The failure of any person or entity to disclose as required under any term of Executive Order 98-04, or the violation of any rule, regulation or policy promulgated by the Department of Finance and Administration pursuant to this Order, shall be considered a material breach of the terms of the contract or grant and shall subject the party failing to disclose or in violation to all legal remedies available to the state agency under the provision of existing law.

Please check all that apply if you are a current or former:

_____ Member of the General Assembly of the State of Arkansas

_____ Constitutional Officer of the State of Arkansas

_____ Member of a Board or Commission of the State of Arkansas

_____ State Employee
_____ Spouse of a current or former member of the general assembly, constitutional officer, board or commission member, or state employee.

_____ I am a current or former: member of the general assembly, constitutional officer, board or commission member, state employee, or spouse or immediate member of these persons as described, and I hold a position of control in the contracting entity or grantee of this application.

_____ I am a current or former: member of the general assembly, constitutional officer, board or commission member, state employee, or spouse or immediate member of these persons as described, and I hold a 10% or higher interest in the contracting entity or grantee of this application.

I hereby acknowledge that failure to disclose the information as required by Executive Order 98-04 shall constitute a material breach of any future agreement, resulting from this application, with the State of Arkansas or any state agency acting on its behalf.

I also acknowledge that any individual drawing a salary or performing personal services for an agency must disclose any direct or indirect benefit he or she may receive as a result of any State contract with an entity in which he or she has a financial interest. I understand that failure to report this information may subject me to criminal sanctions, as provided in Ark. Code Ann. §19-11-702.

_____
Name

_____
Date

TECHNICAL SPECIFICATIONS

PROJECT MANUAL

MAMMOTH SPRING SENIOR CENTER

MAMMOTH SPRING, ARKANSAS

ARCHITECT PROJECT NO. 2114

CONSTRUCTION DOCUMENTS

JULY 9, 2021

COOPER MIXON
ARCHITECTS

505 UNION STREET, 2ND FLOOR
JONESBORO, AR 72401
www.coopermixon.com

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SECTION 00 01 05

CERTIFICATIONS PAGE

I hereby certify that these plans and specifications have been prepared by me or under my supervision. I further certify that to the best of my knowledge these plans and specifications are as required by law and in compliance with the Arkansas Fire Prevention Code for the state of Arkansas.

John Mixon, Architect

COOPER MIXON ARCHITECTS PLLC
505 Union Street, 2nd Floor
Jonesboro, Arkansas 724 01

DATE: July 9, 2021

SECTION 00 01 05

CERTIFICATIONS PAGE

I hereby certify that the structural portions of these plans and technical specifications have been prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the state of Arkansas. I certify that to the best of my knowledge the structural portions of the plans and specifications are designed as required by law and in compliance with all applicable codes for the state of Arkansas.

Jordan Lane, PE

NORTH DELTA ENGINEERING
311 West Huntington Area
Jonesboro, AR 72401

DATE: July 9, 2021

SECTION 00 01 05

CERTIFICATIONS PAGE

I hereby certify that the mechanical and plumbing portions of these plans and technical specifications have been prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the state of Arkansas.

Wes Collier, PE

DW COLLIER ENGINEERING, INC.
720 Broadway Street
Suite 100
South Fulton, TN 38257

DATE: July 9, 2021

SECTION 00 01 05

CERTIFICATIONS PAGE

I hereby certify that the electrical portions of these plans and technical specifications have been prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the state of Arkansas.

D. Brad Story, PE

DW COLLIER ENGINEERING, INC.
720 Broadway Street
Suite 100
South Fulton, TN 38257

DATE: July 9, 2021

SECTION 00 01 10
TABLE OF CONTENTS

END OF SECTION

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SECTION 01 10 00
SUMMARY

PART 1 GENERAL

1.01 PROJECT

A. Project Name: Mammoth Spring Senior Center

B. Owner's Name: City of Mammoth Spring.

C. Architect's Name: Cooper Mixon Architects, LLC.

D. The Project consists of the construction of a senior center for the City of Mammoth Spring, Arkansas.

1.02 CONTRACT DESCRIPTION

A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 52 00 - Agreement Form.

1.03 WORK BY OWNER

A. Items noted NIC (Not in Contract) will be supplied and installed by Owner before Substantial Completion.

B. Owner will supply the following for installation by Contractor:
   1. Kitchen Appliances - See Equipment Schedule on Sheet A-101.
   2. Pass-Through Ledges.
   3. Stainless Steel Countertops in Kitchen.

1.04 OWNER OCCUPANCY

A. Owner intends to occupy the Project upon Substantial Completion.

B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

C. Schedule the Work to accommodate Owner occupancy.

1.05 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations: Limited to areas noted on Drawings.
   1. Locate and conduct construction activities in ways that will limit disturbance to site.

B. Arrange use of site and premises to allow:
   1. Owner occupancy.
   2. Work by Others.
   3. Work by Owner.
   4. Use of site and premises by the public.

C. Provide access to and from site as required by law and by Owner:
   1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
   2. Do not obstruct roadways, sidewalks, or other public ways without permit.

D. Time Restrictions:
   1. Limit conduct of especially noisy exterior work to comply with Owner requirements.

E. Utility Outages and Shutdown:
   1. Limit disruption of utility services to hours the building is unoccupied.
   2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
   3. Prevent accidental disruption of utility services to other facilities.

F. Coordinate construction schedule and operations with Owner.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedures for preparation and submittal of applications for progress payments.

B. Documentation of changes in Contract Sum and Contract Time.

C. Change procedures.

1.02 RELATED REQUIREMENTS

A. See Division 00 for General Conditions.

1.03 SCHEDULE OF VALUES

A. Use Schedule of Values Form: AIA G703, edition stipulated in the Agreement.

B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.

C. Forms filled out by hand will not be accepted.

D. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.

E. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification section. Identify site mobilization.

F. Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.

G. Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.

H. Revise schedule to list approved Change Orders, with each Application For Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at intervals stipulated in the Agreement.

B. Use Form AIA G702 and Form AIA G703, edition stipulated in the Agreement.

C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.

D. Forms filled out by hand will not be accepted.

E. For each item, provide a column for listing each of the following:
   1. Item Number.
   2. Description of work.
   3. Scheduled Values.
   4. Previous Applications.
   5. Work in Place and Stored Materials under this Application.
   6. Authorized Change Orders.
   7. Total Completed and Stored to Date of Application.
   8. Percentage of Completion.
   9. Balance to Finish.
   10. Retainage.

F. Execute certification by signature of authorized officer.

G. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.

H. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.

I. Submit one electronic and three hard-copies of each Application for Payment.

J. Include the following with the application:
   1. Transmittal letter as specified for submittals in Section 01 30 00.
   2. Construction progress schedule, revised and current as specified in Section 01 30 00.
   3. Current construction photographs specified in Section 01 30 00.
   4. Partial release of liens from major subcontractors and vendors.
   5. Affidavits attesting to off-site stored products.

K. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.05 MODIFICATION PROCEDURES

A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to Contract Documents.

B. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor.

C. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
   1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
   2. Promptly execute the change.

D. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 7 days.

E. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation. Document any requested substitutions in accordance with Section 01 6000.

F. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
   1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
   2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.
   3. For pre-determined unit prices and quantities, the amount will based on the fixed unit prices.
   4. For change ordered by Architect without a quotation from Contractor, the amount will be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.

G. Substantiation of Costs: Provide full information required for evaluation.
   1. On request, provide the following data:
      a. Quantities of products, labor, and equipment.
      b. Taxes, insurance, and bonds.

c. Overhead and profit.
d. Justification for any change in Contract Time.
e. Credit for deletions from Contract, similarly documented.

2. Support each claim for additional costs with additional information:
a. Origin and date of claim.
b. Dates and times work was performed, and by whom.
c. Time records and wage rates paid.
d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

H. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

I. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

J. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

K. Promptly enter changes in Project Record Documents.

1.06 APPLICATION FOR FINAL PAYMENT

A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.

B. Application for Final Payment will not be considered until the following have been accomplished:
1. All closeout procedures specified in Section 01 70 00.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01 21 00
ALLOWANCES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cash allowances.

B. Inspecting and testing allowances.

C. Payment and modification procedures relating to allowances.

1.02 RELATED REQUIREMENTS

A. Section 01 20 00 - Price and Payment Procedures: Additional payment and modification procedures.

1.03 CASH ALLOWANCES

A. Costs Included in Cash Allowances: Cost of product to Contractor or subcontractor, less applicable trade discounts, less cost of delivery to site , less applicable taxes .

B. Costs Not Included in Cash Allowances: Product delivery to site and handling at the site, including unloading, uncrating, and storage; protection of products from elements and from damage; and labor for installation and finishing.

C. Architect Responsibilities:
   1. Consult with Contractor for consideration and selection of products, suppliers , and installers.
   2. Select products in consultation with Owner and transmit decision to Contractor.
   3. Prepare Change Order.

D. Contractor Responsibilities:
   1. Assist Architect in selection of products, suppliers , and installers.
   2. Obtain proposals from suppliers and installers and offer recommendations.
   3. On notification of which products have been selected, execute purchase agreement with designated supplier and installer.
   4. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
   5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.

E. Differences in costs will be adjusted by Change Order.

1.04 INSPECTING AND TESTING ALLOWANCES

A. Costs Included in Inspecting and Testing Allowances: Cost of engaging an inspecting or testing agency; execution of inspecting and tests; and reporting results.

B. Costs Not Included in the Inspecting and Testing Allowances:
   1. Costs of incidental labor and facilities required to assist inspecting or testing agency.
   2. Costs of testing services used by Contractor separate from Contract Document requirements.
   3. Costs of retesting upon failure of previous tests as determined by Architect.

C. Payment Procedures:
   1. Submit one copy of the inspecting or testing firm's invoice with next application for payment.
   2. Pay invoice on approval by Architect.

D. Differences in cost will be adjusted by Change Order.

1.05 ALLOWANCES SCHEDULE

A. Section 10 14 00 - Signage: Include the stipulated sum of $2,000.00 for purchase, delivery, and installation of Exterior Signage.

B. Inspecting and Testing Allowance: Include the sum of $5,000.00 for payment of inspecting services specified in Section 01 40 00 - Quality Requirements.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 22 00
UNIT PRICES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. List of unit prices, for use in preparing Bids.

B. Measurement and payment criteria applicable to Work performed under a unit price payment method.

C. Defect assessment and non-payment for rejected work.

1.02 RELATED REQUIREMENTS

A. Document 00 21 13 - Instructions to Bidders: Instructions for preparation of pricing for Unit Prices.

B. Document 00 43 22 - Unit Prices Form: List of Unit Prices as supplement to Bid Form

C. Section 01 20 00 - Price and Payment Procedures: Additional payment and modification procedures.

1.03 COSTS INCLUDED

A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

1.04 UNIT QUANTITIES SPECIFIED

A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements of actual Work will determine the payment amount.

1.05 MEASUREMENT OF QUANTITIES

A. Measurement methods delineated in the individual specification sections complement the criteria of this section.

B. Take all measurements and compute quantities. Measurements and quantities will be verified by Architect.

C. Assist by providing necessary equipment, workers, and survey personnel as required.

D. Measurement Devices:
   1. Weigh Scales: Inspected, tested and certified by the applicable state Weights and Measures department within the past year.
   2. Platform Scales: Of sufficient size and capacity to accommodate the conveying vehicle.
   3. Metering Devices: Inspected, tested and certified by the applicable state department within the past year.

E. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.

F. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.

G. Measurement by Area: Measured by square dimension using mean length and width or radius.

H. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.

I. Stipulated Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.

J. Perform surveys required to determine quantities, including control surveys to establish measurement reference lines. Notify Architect prior to starting work.

K. Contractor's Engineer Responsibilities: Sign surveyor's field notes or keep duplicate field notes , calculate and certify quantities for payment purposes.

1.06 PAYMENT

A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Architect, multiplied by the unit price.

B. Payment will not be made for any of the following:
   1. Products wasted or disposed of in a manner that is not acceptable.
   2. Products determined as unacceptable before or after placement.
   3. Products not completely unloaded from the transporting vehicle.
   4. Products placed beyond the lines and levels of the required Work.
   5. Products remaining on hand after completion of the Work.
   6. Loading, hauling, and disposing of rejected Products.

1.07 DEFECT ASSESSMENT

A. Replace Work, or portions of the Work, not complying with specified requirements.

B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct one of the following remedies:
   1. The defective Work may remain, but the unit price will be adjusted to a new unit price at the discretion of Architect.
   2. The defective Work will be partially repaired to the instructions of the Architect, and the unit price will be adjusted to a new unit price at the discretion of Architect.

C. If, in the opinion of Owner, it is not practical to remove and replace the Work, Owner will direct one of the following remedies:
   1. The defective Work may remain, but the unit price will be adjusted to a new unit price at the discretion of Owner.
   2. The defective Work will be partially repaired to the instructions of the Owner, and the unit price will be adjusted to a new unit price at the discretion of Owner.

D. The individual specification sections may modify these options or may identify a specific formula or percentage price reduction.

E. The authority of Architect to assess the defect and identify payment adjustment is final.

1.08 SCHEDULE OF UNIT PRICES

A. Unit prices shall be as indicated on the Bid Proposal Form.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 25 00
SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedural requirements for proposed substitutions.

1.02 RELATED REQUIREMENTS

A. Section 00 21 13 - Instructions to Bidders: Restrictions on timing of substitution requests.

B. Section 01 25 10 - Substitution Request Form: Required form for substitution requests made prior to award (during procurement) or after award (during construction) of contract

C. Section 01 30 00 - Administrative Requirements: Submittal procedures, coordination.

D. Section 01 60 00 - Product Requirements: Fundamental product requirements, product options, delivery, storage, and handling.

1.03 DEFINITIONS

A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
   1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
      a. Unavailability.
      b. Regulatory changes.
   2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.
      a. Substitution requests offering advantages solely to the Contractor will not be considered.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
   2. Agrees to provide the same warranty for the substitution as for the specified product.
   3. Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
   4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
   5. Waives claims for additional costs or time extension that may subsequently become apparent.
   6. Agrees to reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.

B. A Substitution Request for specified installer constitutes a representation that the submitter:
   1. Has acted in good faith to obtain services of specified installer, but was unable to come to commercial, or other terms.

C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
   1. Note explicitly any non-compliant characteristics.

D. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.

1. Forms indicated in the Project Manual are adequate for this purpose, and must be used.

E. Limit each request to a single proposed substitution item.
1. Submit an electronic document, combining the request form with supporting data into single document.

3.02 SUBSTITUTION PROCEDURES DURING PROCUREMENT

A. Instructions to Bidders specifies time restrictions for submitting requests for substitutions during the bidding period, and the documents required.

B. Submittal Form (before award of contract):
1. Submit substitution requests by completing the form attached to this section. See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable.

C. Owner will consider requests for substitutions only if submitted at least 10 days prior to the date for receipt of bids.

3.03 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

A. Submittal Form (after award of contract):
1. Submit substitution requests by completing the form attached to this section. See this section for additional information and instructions. Use only this form; other forms of submission are unacceptable.

B. Architect will consider requests for substitutions only within 15 days after date of Agreement.

C. Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.

D. Submit request for Substitution for Convenience immediately upon discovery of its potential advantage to the project, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
1. In addition to meeting general documentation requirements, document how the requested substitution benefits the Owner through cost savings, time savings, greater energy conservation, or in other specific ways.
2. Document means of coordinating of substitution item with other portions of the work, including work by affected subcontractors.
3. Bear the costs engendered by proposed substitution of:
a. Owner's compensation to the Architect for any required redesign, time spent processing and evaluating the request.
b. Other construction by Owner.
c. Other unanticipated project considerations.

E. Substitutions will not be considered under one or more of the following circumstances:
1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
2. Without a separate written request.
3. When acceptance will require revisions to Contract Documents.

3.04 RESOLUTION

A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.

B. Architect will notify Contractor in writing of decision to accept or reject request.
1. Architect's decision following review of proposed substitution will be noted on the submitted form.

3.05 ACCEPTANCE

A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

3.06 CLOSEOUT ACTIVITIES

A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.

B. Include completed Substitution Request Forms as part of the Project record. Include both approved and rejected Requests.

3.07 ATTACHMENTS

A. A facsimile of the Substitution Request Form (During Construction) required to be used on the Project is included after this section.

END OF SECTION

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SECTION 01 25 10
SUBSTITUTION REQUEST FORM

DATE: _____

PROJECT NAME: _____

Company Submitting Request (name and address):

_____

Contact Name: _____**Phone**: _____

Email: _____

SPECIFIED ITEM (Section, Page, and Description):

_____

PROPOSED SUBSTITUTION (Provide product name, Model, manufacturer):

_____

Differences between proposed substitution and specified product:

_____

_____

POINT-BY-POINT COMPARATIVE DATA SHEET ATTACHED - REQUIRED BY ARCHITECT FOR THIS REQUEST:

A. Attached Data includes product description, specifications, drawings, photographs, and performance and test data, applicable portions of the data adequate for the evaluation of the request, and with applicable portions of the data clearly identified.

B. _____yes _____no changes will be required to the Contract Documents for the proper installation of proposed product substitution. If yes, then attach data that includes description of changes.

THE UNDERSIGNED CERTIFIES THAT THE FOLLOWING PARAGRAPHS, UNLESS MODIFIED BY ATTACHMENTS, ARE CORRECT:

C. Proposed substitution has been fully investigated and determined to be equal or superior in all respects to the specified products performance.

D. Proposed substitution does not affect the building design, engineering design, dimensions, detailing, or performance values.

E. The proposed substitution will have no adverse effect on other trades, the construction schedule, or specified warranty requirements.

F. No maintenance is required by the proposed substitution other than that required for originally specified product.

G. Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by substitution.

SIGNATURE _____PRINTED NAME: _____

ARCHITECT'S REVIEW AND ACTION:

A. _____ Accepted As Noted _____ Incomplete Information

_____ Received Too Late _____ No Substitutions accepted for this product

B. Reviewed By:

_____DATE:_____

C. Processed by Addendum No. _____

D. Comments:

_____

_____

END OF SECTION

SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preconstruction meeting.

B. Site mobilization meeting.

C. Progress meetings.

D. Progress photographs.

E. Submittals for review, information, and project closeout.

F. Number of copies of submittals.

G. Requests for Interpretation (RFI) procedures.

H. Submittal procedures.

1.02 RELATED REQUIREMENTS

A. Section 00 72 00 - General Conditions: Dates for applications for payment.

B. Section 01 60 00 - Product Requirements: General product requirements.

C. Section 01 70 00 - Execution and Closeout Requirements: Additional coordination requirements.

D. Section 01 78 00 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.

1.03 REFERENCE STANDARDS

A. AIA G716 - Request for Information 2004.

B. AIA G810 - Transmittal Letter 2001.

C. Make the following types of submittals to Architect:
   1. Requests for Interpretation (RFI).
   2. Requests for substitution.
   3. Shop drawings, product data, and samples.
   4. Test and inspection reports.
   5. Design data.
   6. Manufacturer's instructions and field reports.
   7. Applications for payment and change order requests.
   8. Progress schedules.
   9. Coordination drawings.
   10. Correction Punch List and Final Correction Punch List for Substantial Completion.
   11. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

A. Architect will schedule a meeting after Notice of Award.

B. Attendance Required:
   1. Owner.
   2. Architect.
   3. Contractor.

C. Agenda:
   1. Execution of Owner-Contractor Agreement.

2. Submission of executed bonds and insurance certificates.
3. Distribution of Contract Documents.
4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
5. Submission of initial Submittal schedule.
6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
7. Scheduling.
8. Scheduling activities of a Geotechnical Engineer, if applicable.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.02 SITE MOBILIZATION MEETING

A. Architect will schedule meeting at the Project site prior to Contractor occupancy.

B. Attendance Required:
1. Contractor.
2. Owner.
3. Architect.
4. Contractor's superintendent.
5. Major subcontractors.

C. Agenda:
1. Use of premises by Owner and Contractor.
2. Owner's requirements.
3. Construction facilities and controls provided by Owner.
4. Temporary utilities provided by Owner.
5. Survey and building layout.
6. Security and housekeeping procedures.
7. Schedules.
8. Application for payment procedures.
9. Procedures for testing.
10. Procedures for maintaining record documents.
11. Requirements for start-up of equipment.
12. Inspection and acceptance of equipment put into service during construction period.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.03 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the work at maximum bi-monthly intervals.

B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

C. Attendance Required:
1. Contractor.
2. Owner.
3. Architect.
4. Contractor's superintendent.
5. Major subcontractors.

D. Agenda:
1. Review minutes of previous meetings.
2. Review of work progress.

3. Field observations, problems, and decisions.
4. Identification of problems that impede, or will impede, planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of RFIs log and status of responses.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to work.

E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

F. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.

3.04 PROGRESS PHOTOGRAPHS

A. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.

B. Maintain one set of all photographs at project site for reference; same copies as submitted, identified as such.

C. Photography Type: Digital; electronic files.

D. Provide photographs of site and construction throughout progress of work produced by an experienced photographer, acceptable to Architect.

E. In addition to periodic, recurring views, take photographs of each of the following events:
1. Completion of site clearing.
2. Excavations in progress.
3. Foundations in progress and upon completion.
4. Structural framing in progress and upon completion.
5. Enclosure of building, upon completion.
6. Final completion, minimum of ten (10) photos.

F. Views:
1. Provide aerial photographs from four cardinal views at each specified time, until structure is enclosed.
2. Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Completion.
3. Consult with Architect for instructions on views required.
4. Provide factual presentation.
5. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
6. Point of View Sketch: Include digital copy of point of view sketch with each electronic submittal; include point of view identification in each photo file name.
7. Photo CD(s): Provide 1 copy including all photos cumulative to date and PDF file(s), with files organized in separate folders by submittal date.
8. Hard Copy: Printed hardcopy (grayscale) of PDF file and point of view sketch.

3.05 REQUESTS FOR INFORMATION (RFI)

A. Definition: A request seeking one of the following:
1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy

the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
2. A resolution to an issue which has arisen due to field conditions and affects design intent.

B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.

C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
1. Prepare a separate RFI for each specific item.
   a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
   b. Do not forward requests which solely require internal coordination between subcontractors.
2. Prepare in a format and with content acceptable to Owner.
   a. Use AIA G716 - Request for Information .
3. Prepare using an electronic version of the form appended to this section.

D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
2. Unacceptable Uses for RFIs: Do not use RFIs to request the following::
   a. Approval of submittals (use procedures specified elsewhere in this section).
   b. Approval of substitutions (see Section - 01 60 00 - Product Requirements)
   c. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).
   d. Different methods of performing work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Conditions of the Contract).
3. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
4. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.
   a. The Owner reserves the right to assess the Contractor for the costs (on time-and-materials basis) incurred by the Architect, and any of its consultants, due to processing of such RFIs.

E. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
1. Official Project name and number, and any additional required identifiers established in Contract Documents.
2. Owner's, Architect's, and Contractor's names.
3. Discrete and consecutive RFI number, and descriptive subject/title.
4. Issue date, and requested reply date.
5. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
6. Annotations: Field dimensions and/or description of conditions which have engendered the request.

7. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.

F. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.

G. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
   1. Indicate current status of every RFI. Update log promptly and on a regular basis.
   2. Note dates of when each request is made, and when a response is received.
   3. Highlight items requiring priority or expedited response.
   4. Highlight items for which a timely response has not been received to date.

H. Review Time: Architect will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
   1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.

I. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
   1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
   2. Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
   3. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.
   4. Notify Architect within seven calendar days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified above.

3.06 SUBMITTAL SCHEDULE

A. Submit to Architect for review a schedule for submittals in tabular format.
   1. Submit at the same time as the preliminary schedule specified in Section - 01 32 16 - Construction Progress Schedule.
   2. Coordinate with Contractor's construction schedule and schedule of values.
   3. Format schedule to allow tracking of status of submittals throughout duration of construction.
   4. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.
   5. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
      a. For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.

3.07 SUBMITTALS FOR REVIEW

A. When the following are specified in individual sections, submit them for review:
   1. Product data.

2. Shop drawings.
3. Samples for selection.
4. Samples for verification.

B. Submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.

C. Samples will be reviewed for aesthetic, color, or finish selection.

D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

3.08 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
1. Design data.
2. Sustainability design submittals and reports.
3. Certificates.
4. Test reports.
5. Inspection reports.
6. Manufacturer's instructions.
7. Manufacturer's field reports.
8. Other types indicated.

B. Submit for Architect's knowledge as contract administrator or for Owner.

3.09 SUBMITTALS FOR PROJECT CLOSEOUT

A. Submit Correction Punch List for Substantial Completion.

B. Submit Final Correction Punch List for Substantial Completion.

C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 78 00 - Closeout Submittals:
1. Project record documents.
2. Operation and maintenance data.
3. Warranties.
4. Bonds.
5. Other types as indicated.

D. Submit for Owner's benefit during and after project completion.

3.10 NUMBER OF COPIES OF SUBMITTALS

A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.

B. Extra Copies at Project Closeout: See Section 01 78 00.

C. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
1. After review, produce duplicates.
2. Retained samples will not be returned to Contractor unless specifically so stated.

3.11 SUBMITTAL PROCEDURES

A. General Requirements:
1. Use a separate transmittal for each item.
2. Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
3. Transmit using approved form options.
a. Use Form AIA G810.

b. Use form generated by Electronic Document Submittal Service software.

4. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
5. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
6. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
   a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
7. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
   a. Send submittals in electronic format via email to Architect.
8. Schedule submittals to expedite the Project, and coordinate submission of related items.
   a. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
   b. For sequential reviews involving Architect's consultants, Owner, or another affected party, allow an additional 7 days.
   c. For sequential reviews involving approval from authorities having jurisdiction (AHJ), in addition to Architect's approval, allow an additional 30 days.
9. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
10. When revised for resubmission, identify all changes made since previous submission.
11. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
12. Submittals not requested will be recognized, and will be returned "Not Reviewed",

B. Product Data Procedures:
   1. Submit only information required by individual specification sections.
   2. Collect required information into a single submittal.
   3. Submit concurrently with related shop drawing submittal.
   4. Do not submit (Material) Safety Data Sheets for materials or products.
   5. Submit sustainable design reporting submittals under separate cover.

C. Shop Drawing Procedures:
   1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
   2. Do not reproduce Contract Documents to create shop drawings.
   3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.

D. Samples Procedures:
   1. Transmit related items together as single package.
   2. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.
   3. Include with transmittal high-resolution image files of samples to facilitate electronic review and approval. Provide separate submittal page for each item image.

3.12 SUBMITTAL REVIEW

A. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.

B. Submittals for Information: Architect will acknowledge receipt and review. See below for actions to be taken.

C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
   1. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.

D. Architect's and consultants' actions on items submitted for review:
   1. Authorizing purchasing, fabrication, delivery, and installation:
      a. "Approved", or language with same legal meaning.
      b. "Approved as Noted, Resubmission not required", or language with same legal meaning.
         1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
      c. "Approved as Noted, Resubmit for Record", or language with same legal meaning.
         1) Resubmit corrected item, with review notations acknowledged and incorporated. Resubmit separately, or as part of project record documents.
         2) Non-responsive resubmittals may be rejected.
   2. Not Authorizing fabrication, delivery, and installation:
      a. "Revise and Resubmit".
         1) Resubmit revised item, with review notations acknowledged and incorporated.
         2) Non-responsive resubmittals may be rejected.
      b. "Rejected".
         1) Submit item complying with requirements of Contract Documents.

E. Architect's and consultants' actions on items submitted for information:
   1. Items for which no action was taken:
      a. "Received" - to notify the Contractor that the submittal has been received for record only.
   2. Items for which action was taken:
      a. "Reviewed" - no further action is required from Contractor.

END OF SECTION

SECTION 01 32 16
CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preliminary schedule.

B. Construction progress schedule, with network analysis diagrams and reports.

1.02 RELATED SECTIONS

A. Section 01 10 00 - Summary: Work sequence.

1.03 REFERENCE STANDARDS

A. AGC (CPSM) - Construction Planning and Scheduling Manual 2004.

1.04 SUBMITTALS

A. Within 10 days after date of Agreement, submit preliminary schedule.

B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
   1. Include written certification that major contractors have reviewed and accepted proposed schedule.

D. Within 10 days after joint review, submit complete schedule.

E. Submit updated schedule with each Application for Payment.

F. Submit in PDF format.

G. Submit the number of opaque reproductions that Contractor requires, plus two copies that will be retained by Architect.

H. Submit one reproducible transparency and one opaque reproduction.

I. Submit under transmittal letter form specified in Section 01 30 00 - Administrative Requirements.

1.05 QUALITY ASSURANCE

A. Scheduler: Contractor's personnel or specialist Consultant specializing in CPM scheduling with one years minimum experience in scheduling construction work of a complexity comparable to this Project, and having use of computer facilities capable of delivering a detailed graphic printout within 48 hours of request.

1.06 SCHEDULE FORMAT

A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.

B. Diagram Sheet Size: Maximum 22 x 17 inches.

C. Sheet Size: Multiples of 8-1/2 x 11 inches.

D. Scale and Spacing: To allow for notations and revisions.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRELIMINARY SCHEDULE

A. Prepare preliminary schedule in the form of a horizontal bar chart.

3.02 CONTENT

A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.

B. Identify each item by specification section number.

C. Identify work of separate stages and other logically grouped activities.

D. Provide sub-schedules for each stage of Work identified in Section 01 10 00 - Summary.

E. Provide sub-schedules to define critical portions of the entire schedule.

F. Include conferences and meetings in schedule.

G. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.

H. Provide separate schedule of submittal dates for shop drawings, product data, and samples, owner-furnished products, products identified under Allowances, and dates reviewed submittals will be required from Architect. Indicate decision dates for selection of finishes.

I. Indicate delivery dates for owner-furnished products.

J. Coordinate content with schedule of values specified in Section 01 20 00 - Price and Payment Procedures.

K. Provide legend for symbols and abbreviations used.

3.03 BAR CHARTS

A. Include a separate bar for each major portion of Work or operation.

B. Identify the first work day of each week.

3.04 NETWORK ANALYSIS

A. Prepare network analysis diagrams and supporting mathematical analyses using the Critical Path Method.

B. Illustrate order and interdependence of activities and sequence of work; how start of a given activity depends on completion of preceding activities, and how completion of the activity may restrain start of subsequent activities.

C. Mathematical Analysis: Tabulate each activity of detailed network diagrams, using calendar dates, and identify for each activity:
   1. Preceding and following event numbers.
   2. Activity description.
   3. Estimated duration of activity, in maximum 15 day intervals.
   4. Earliest start date.
   5. Earliest finish date.
   6. Actual start date.
   7. Actual finish date.
   8. Latest start date.
   9. Latest finish date.
   10. Total and free float; float time shall accrue to Owner and to Owner's benefit.
   11. Monetary value of activity, keyed to Schedule of Values.
   12. Percentage of activity completed.
   13. Responsibility.

D. Analysis Program: Capable of compiling monetary value of completed and partially completed activities, accepting revised completion dates, and recomputation of all dates and float.

E. Required Reports: List activities in sorts or groups:

1. By preceding work item or event number from lowest to highest.
2. By amount of float, then in order of early start.
3. By responsibility in order of earliest possible start date.
4. In order of latest allowable start dates.
5. Contractor's periodic payment request sorted by Schedule of Values listings.
6. Listing of basic input data that generates the report.
7. Listing of activities on the critical path.

3.05 REVIEW AND EVALUATION OF SCHEDULE

A. Participate in joint review and evaluation of schedule with Architect at each submittal.

B. Evaluate project status to determine work behind schedule and work ahead of schedule.

C. After review, revise as necessary as result of review, and resubmit within 10 days.

3.06 UPDATING SCHEDULE

A. Maintain schedules to record actual start and finish dates of completed activities.

B. Indicate progress of each activity to date of revision, with projected completion date of each activity.

C. Annotate diagrams to graphically depict current status of Work.

D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.

E. Indicate changes required to maintain Date of Substantial Completion.

F. Submit reports required to support recommended changes.

G. Provide narrative report to define problem areas, anticipated delays, and impact on the schedule. Report corrective action taken or proposed and its effect.

3.07 DISTRIBUTION OF SCHEDULE

A. Distribute copies of updated schedules to Contractor's project site file, to subcontractors, suppliers, Architect, Owner, and other concerned parties.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

END OF SECTION

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SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittals.
B. Quality assurance.
C. Testing and inspection agencies and services.
D. Contractor's construction-related professional design services.
E. Contractor's design-related professional design services.
F. Control of installation.
G. Mock-ups.
H. Tolerances.
I. Manufacturers' field services.
J. Defect Assessment.

1.02 RELATED REQUIREMENTS

A. Document 00 72 00 - General Conditions: Inspections and approvals required by public authorities.
B. Section 01 30 00 - Administrative Requirements: Submittal procedures.
C. Section 01 42 16 - Definitions.
D. Section 01 60 00 - Product Requirements: Requirements for material and product quality.

1.03 REFERENCE STANDARDS

A. IAS AC89 - Accreditation Criteria for Testing Laboratories 2018.

1.04 DEFINITIONS

A. Contractor's Quality Control Plan: Contractor's management plan for executing the Contract for Construction.
B. Contractor's Professional Design Services: Design of some aspect or portion of the project by party other than the design professional of record. Provide these services as part of the Contract for Construction.
    1. Design Services Types Required:
        a. Construction-Related: Services Contractor needs to provide in order to carry out the Contractor’s sole responsibilities for construction means, methods, techniques, sequences, and procedures.
        b. Design-Related: Design services explicitly required to be performed by another design professional due to highly-technical and/or specialized nature of a portion of the project. Services primarily involve engineering analysis, calculations, and design, and are not intended to alter the aesthetic aspects of the design.
C. Design Data: Design-related, signed and sealed drawings, calculations, specifications, certifications, shop drawings and other submittals provided by Contractor, and prepared directly by, or under direct supervision of, appropriately licensed design professional.

1.05 CONTRACTOR'S CONSTRUCTION-RELATED PROFESSIONAL DESIGN SERVICES

A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.
B. Provide such engineering design services as may be necessary to plan and safely conduct certain construction operations, pertaining to, but not limited to the following:
    1. Temporary sheeting, shoring, or supports.

2. Temporary scaffolding.
3. Temporary bracing.
4. Temporary falsework for support of spanning or arched structures.
5. Temporary foundation underpinning.
6. Temporary stairs or steps required for construction access only.
7. Temporary hoist(s) and rigging.
8. Investigation of soil conditions to support construction equipment.

1.06 CONTRACTOR'S DESIGN-RELATED PROFESSIONAL DESIGN SERVICES

A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.

B. Base design on performance and/or design criteria indicated in individual specification sections.
   1. Submit a Request for Interpretation to Architect if the criteria indicated are not sufficient to perform required design services.

1.07 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Designer's Qualification Statement: Submit for Architect's knowledge as contract administrator, or for Owner's information.
   1. Include information for each individual professional responsible for producing, or supervising production of, design-related professional services provided by Contractor.
      a. Full name.
      b. Professional licensure information.
      c. Statement addressing extent and depth of experience specifically relevant to design of items assigned to Contractor.

C. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
   1. Include calculations that have been used to demonstrate compliance to performance and regulatory criteria provided, and to determine design solutions.
   2. Include required product data and shop drawings.
   3. Include a statement or certification attesting that design data complies with criteria indicated, such as building codes, loads, functional, and similar engineering requirements.
   4. Include signature and seal of design professional responsible for allocated design services on calculations and drawings.

D. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Contractor.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of test/inspection.
      h. Date of test/inspection.
      i. Results of test/inspection.
      j. Compliance with Contract Documents.
      k. When requested by Architect, provide interpretation of results.
   2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design

concept expressed in the Contract Documents, or for Owner's information.

E. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
   1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
   2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.

F. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

G. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
   1. Submit report in duplicate within 30 days of observation to Architect for information.
   2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.

H. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for Owner.
   1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
   2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.

1.08 QUALITY ASSURANCE

A. Testing Agency Qualifications:
   1. Prior to start of work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
   2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.

B. Designer Qualifications: Where professional engineering design services and design data submittals are specifically required of Contractor by Contract Documents, provide services of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

1.09 REFERENCES AND STANDARDS

1.10 TESTING AND INSPECTION AGENCIES AND SERVICES

A. Contractor shall employ and pay for services of an independent testing agency to perform specified testing.

B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

C. Contractor Employed Agency:
   1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM E699, ASTM C1021, ASTM C1077, ASTM C1093, and ASTM D3740.
   2. Inspection agency: Comply with requirements of ASTM D3740 and ASTM E329.
   3. Laboratory Qualifications: Accredited by IAS according to IAS AC89.
   4. Laboratory: Authorized to operate in the State in which the Project is located.
   5. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
   6. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement

quality assurance program.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 MOCK-UPS

A. Before installing portions of the Work where mock-ups are required, construct mock-ups in location and size indicated for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and workmanship.

B. Accepted mock-ups establish the standard of quality the Architect will use to judge the Work.

C. Notify Architect fifteen (15) working days in advance of dates and times when mock-ups will be constructed.

D. Provide supervisory personnel who will oversee mock-up construction. Provide workers that will be employed during the construction at Project.

E. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.

F. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

G. Obtain Architect's approval of mock-ups before starting work, fabrication, or construction.
   1. Architect will issue written comments within seven (7) working days of initial review and each subsequent follow up review of each mock-up.
   2. Make corrections as necessary until Architect's approval is issued.

H. Architect will use accepted mock-ups as a comparison standard for the remaining Work.

I. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Architect.

3.03 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

3.04 TESTING AND INSPECTION

A. See individual specification sections for testing and inspection required.

B. Testing Agency Duties:
   1. Test samples of mixes submitted by Contractor.
   2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
   3. Perform specified sampling and testing of products in accordance with specified standards.
   4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   5. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
   6. Perform additional tests and inspections required by Architect.
   7. Submit reports of all tests/inspections specified.

C. Limits on Testing/Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the Work.
   3. Agency may not assume any duties of Contractor.
   4. Agency has no authority to stop the Work.

D. Contractor Responsibilities:
   1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
   2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
   3. Provide incidental labor and facilities:
      a. To provide access to Work to be tested/inspected.
      b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
      c. To facilitate tests/inspections.
      d. To provide storage and curing of test samples.
   4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
   5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
   6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

E. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.

F. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.05 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.

B. Submit qualifications of observer to Architect 30 days in advance of required observations.
   1. Observer subject to approval of Architect.

C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.06 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not complying with specified requirements.

B. If, in the opinion of Architect, it is not practical to remove and replace the work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION

SECTION 01 42 16
DEFINITIONS

PART 1 GENERAL

1.01 SUMMARY

A. This section supplements the definitions contained in the General Conditions.

B. Other definitions are included in individual specification sections.

1.02 DEFINITIONS

A. Furnish: To supply, deliver, unload, and inspect for damage.

B. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, start up, and make ready for use.

C. Product: Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never before used, or re-used materials or equipment.

D. Project Manual: The book-sized volume that includes the procurement requirements (if any), the contracting requirements, and the specifications.

E. Provide: To furnish and install.

F. Supply: Same as Furnish.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01 45 33
CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Code-required special inspections.

B. Testing services incidental to special inspections.

C. Submittals.

D. Fabricators' field services.

1.02 REFERENCE STANDARDS

A. ACI 318 - Building Code Requirements for Structural Concrete and Commentary 2014 (Errata 2018).

B. AISC 341 - Seismic Provisions for Structural Steel Buildings 2016 (Revised 2020).

C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures Most Recent Edition Cited by Referring Code or Reference Standard.

D. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field 2021a.

E. ASTM C172/C172M - Standard Practice for Sampling Freshly Mixed Concrete 2017.

F. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction 2019.

G. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection 2021.

H. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing 2015.

I. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel 2018.

J. ICC (IBC)-2009 - International Building Code 2009.

1.03 SUBMITTALS

A. Special Inspection Agency Qualifications: Prior to the start of work, the Special Inspection Agency is required to:
   1. Submit agency name, address, and telephone number, names of full time registered Engineer and responsible officer.
   2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
   3. Submit certification that Special Inspection Agency is acceptable to AHJ.

B. Test Reports: After each test or inspection, promptly submit at least two copies of report; one to Architect and one to AHJ.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of test or inspection.
      h. Date of test or inspection.

i. Results of test or inspection.
j. Compliance with Contract Documents.

C. Fabricator's Field Reports: Submit reports to Architect and AHJ.
1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in Contract Documents.

1.04 SPECIAL INSPECTION AGENCY

A. Owner or Architect will employ services of a Special Inspection Agency to perform inspections and associated testing and sampling in accordance with ASTM E329 and required by the building code.

B. Employment of agency in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.05 TESTING AND INSPECTION AGENCIES

1.06 QUALITY ASSURANCE

A. Testing Agency Qualifications:
1. Independent firm specializing in performing testing and inspections of the type specified in this section.

B. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 SCHEDULE OF SPECIAL INSPECTIONS, GENERAL

A. Frequency of Special Inspections: Special Inspections are indicated as continuous or periodic.
1. Continuous Special Inspection: Special Inspection Agency is required to be present in the area where the work is being performed and observe the work at all times the work is in progress.
2. Periodic Special Inspection: Special Inspection Agency is required to be present in the area where work is being performed and observe the work part-time or intermittently and at the completion of the work.

3.02 SPECIAL INSPECTIONS FOR CONCRETE CONSTRUCTION

A. Reinforcing Steel, Including Prestressing of Tendons and Placement: Verify compliance with approved Contract Documents and ACI 318, Sections 3.5 and 7.1 through 7.7; periodic.

B. Reinforcing Steel Welding: Verify compliance with AWS D1.4/D1.4M and ACI 318, Section 3.5.2; periodic.

C. Anchors Cast in Concrete: Verify compliance with ACI 318, 17.8.2; periodic.

D. Anchors Post-Installed in Hardened Concrete: Verify compliance with ACI 318.
1. Adhesive Anchors: Verify horizontally or upwardly-inclined orientation installations resisting sustained tension loads - Section 17.8.2.4; continuous.
2. Other Mechanical and Adhesive Anchors: Verify as per Chapter 17.8.2; periodic.

E. Design Mix: Verify plastic concrete complies with the design mix in approved Contract Documents and with ACI 318, Chapter 4 and 5.2; periodic.

F. Concrete Sampling Concurrent with Strength Test Sampling: Each time fresh concrete is sampled for strength tests, verify compliance with ASTM C172/C172M, ASTM C31/C31M and ACI 318, Chapter 26.5, 26.12, and record the following, continuous:
1. Slump.

2. Air content.
3. Temperature of concrete.

G. Specified Curing Temperature and Techniques: Verify compliance with approved Contract Documents and ACI 318, Sections 5.11 through 5.13; periodic.

H. Concrete Strength in Situ: Verify concrete strength complies with approved Contract Documents and ACI 318, Section 6.2, for the following.

I. Formwork Shape, Location and Dimensions: Verify compliance with approved Contract Documents and ACI 318, Section 6.1.1; periodic.

3.03 SPECIAL INSPECTIONS FOR SOILS

A. Materials and Placement: Verify each item below complies with approved construction documents and approved geotechnical report.
1. Design bearing capacity of material below shallow foundations; periodic.
2. Design depth of excavations and suitability of material at bottom of excavations; periodic.
3. Materials, densities, lift thicknesses; placement and compaction of backfill: continuous.
4. Subgrade, prior to placement of compacted fill verify proper preparation; periodic.

B. Testing: Classify and test excavated material; periodic.

3.04 SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE

A. Seismic Force-Resisting Systems: Comply with the quality assurance plan requirements of AISC 341.

B. Designated Seismic System Verification: Verify label, anchorage or mounting complies with certificate of compliance provided by manufacturer or fabricator.

C. Structural Observations for Seismic Resistance: Visually observe structural system for general compliance with the approved Contract Documents; periodic.

3.05 TESTING AGENCY DUTIES AND RESPONSIBILITIES

A. Testing Agency Duties:
1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
2. Perform specified sampling and testing of products in accordance with specified standards.
3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of work or products.
5. Perform additional tests and inspections required by Architect.
6. Submit reports of all tests or inspections specified.

B. Limits on Testing or Inspection Agency Authority:
1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency may not approve or accept any portion of the work.
3. Agency may not assume any duties of Contractor.
4. Agency has no authority to stop the work.

C. On instructions by Architect, perform re-testing required because of non-compliance with specified requirements, using the same agency.

D. Contractor will pay for re-testing required because of non-compliance with specified requirements.

3.06 CONTRACTOR DUTIES AND RESPONSIBILITIES

A. Contractor Responsibilities, General:
   1. Deliver to agency at designated location, adequate samples of materials for special inspections that require material verification.
   2. Cooperate with agency and laboratory personnel; provide access to approved documents at project site, to the work, to manufacturers' facilities, and to fabricators' facilities.
   3. Provide incidental labor and facilities:
      a. To provide access to work to be tested or inspected.
      b. To obtain and handle samples at the site or at source of Products to be tested or inspected.
      c. To facilitate tests or inspections.
      d. To provide storage and curing of test samples.
   4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing or inspection services.
   5. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

B. Contractor Responsibilities, Seismic Force-Resisting System, Designated Seismic System, and Seismic Force-Resisting Component: Submit written statement of responsibility for each item listed in the Statement of Special Inspections to AHJ and Owner prior to starting work. Statement of responsibility shall acknowledge awareness of special construction requirements and other requirements listed.

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary sanitary facilities.

B. Vehicular access and parking.

C. Waste removal facilities and services.

D. Project identification sign.

1.02 RELATED REQUIREMENTS

A. Section 01 51 00 - Temporary Utilities.

1.03 TEMPORARY UTILITIES - SEE SECTION 01 51 00

A. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.

B. New permanent facilities may be used.

C. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.04 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

B. Maintain daily in clean and sanitary condition.

C. At end of construction, return facilities to same or better condition as originally found.

1.05 VEHICULAR ACCESS AND PARKING

A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.

B. Coordinate access and haul routes with governing authorities and Owner.

C. Provide and maintain access to fire hydrants, free of obstructions.

D. Provide means of removing mud from vehicle wheels before entering streets.

E. Designated existing on-site roads may be used for construction traffic.

1.06 WASTE REMOVAL

A. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.

B. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

C. Provide containers with lids. Remove trash from site periodically.

D. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.07 PROJECT IDENTIFICATION

A. Provide project identification sign of design and construction indicated on drawings.

B. Erect on site at location established by Architect.

C. No other signs are allowed without Owner permission except those required by law.

1.08 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.

B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.

C. Clean and repair damage caused by installation or use of temporary work.

D. Restore existing facilities used during construction to original condition.

E. Restore new permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 51 00
TEMPORARY UTILITIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary Utilities: Provision of electricity, lighting, heat, ventilation, and water.

1.02 RELATED REQUIREMENTS

A. Section 01 50 00 - Temporary Facilities and Controls:
   1. Temporary telecommunications services for administrative purposes.
   2. Temporary sanitary facilities required by law.

1.03 REFERENCE STANDARDS

A. Cost: By Contractor.

B. Provide power service required from utility source.

C. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.

D. Provide main service disconnect and over-current protection at convenient location and meter.

E. Permanent convenience receptacles may be utilized during construction.

F. Provide adequate distribution equipment, wiring, and outlets to provide single phase branch circuits for power and lighting.

G. Permanent building lighting may be utilized during construction.

1.04 TEMPORARY HEATING

A. Cost of Energy: By Contractor.

B. Provide heating devices and heat as needed to maintain specified conditions for construction operations.

1.05 TEMPORARY COOLING

A. Cost of Energy: By Contractor.

B. Provide cooling devices and cooling as needed to maintain specified conditions for construction operations.

1.06 TEMPORARY WATER SERVICE

A. Cost of Water Used: By Contractor.

B. Provide and maintain suitable quality water service for construction operations at time of project mobilization.

C. Extend branch piping with outlets located so water is available by hoses with threaded connections. Provide temporary pipe insulation to prevent freezing.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General product requirements.

B. Re-use of existing products.

C. Transportation, handling, storage and protection.

D. Product option requirements.

E. Substitution limitations.

F. Procedures for Owner-supplied products.

G. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS

A. Section 01 10 00 - Summary: Identification of Owner-supplied products.

B. Section 01 25 00 - Substitution Procedures: Substitutions made during procurement and/or construction phases.

C. Section 01 40 00 - Quality Requirements: Product quality monitoring.

D. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Requirements for VOC-restricted product categories.

E. Section 01 74 19 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting product selection, packaging and substitutions.

F. Section 22 05 13 - Common Motor Requirements for Plumbing Equipment: Motors for plumbing equipment.

G. Section 23 05 13 - Common Motor Requirements for HVAC Equipment: Motors for HVAC equipment.

1.03 REFERENCE STANDARDS

A. NEMA MG 1 - Motors and Generators 2018.

B. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS

A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
   1. Submit within 15 days after date of Agreement.
   2. For products specified only by reference standards, list applicable reference standards.

B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
   1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.

B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.

C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.

2.02 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by Contract Documents.

B. See Section 01 40 00 - Quality Requirements, for additional source quality control requirements.

C. Use of products having any of the following characteristics is not permitted:
   1. Made outside the United States, its territories, Canada, or Mexico.
   2. Made using or containing CFC's or HCFC's.
   3. Made of wood from newly cut old growth timber.
   4. Containing lead, cadmium, or asbestos.

D. Where other criteria are met, Contractor shall give preference to products that:
   1. If used on interior, have lower emissions, as defined in Section 01 61 16.
   2. If wet-applied, have lower VOC content, as defined in Section 01 61 16.
   3. Are extracted, harvested, and/or manufactured closer to the location of the project.
   4. Have longer documented life span under normal use.

E. Provide interchangeable components of the same manufacture for components being replaced.

F. Motors: Refer to Section 21 05 13 - Common Motor Requirements for Fire Suppression Equipment, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.

G. Motors: Refer to Section 22 05 13 - Common Motor Requirements for Plumbing Equipment, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.

H. Motors: Refer to Section 23 05 13 - Common Motor Requirements for HVAC Equipment, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.

I. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Size terminal lugs to NFPA 70, include lugs for terminal box.

J. Cord and Plug: Provide minimum 6 foot cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

2.03 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.04 MAINTENANCE MATERIALS

A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS

A. See Section 01 25 00 - Substitution Procedures.

3.02 OWNER-SUPPLIED PRODUCTS

A. See Section 01 10 00 - Summary for identification of Owner-supplied products.

B. Owner's Responsibilities:
   1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
   2. Arrange and pay for product delivery to site.
   3. On delivery, inspect products jointly with Contractor.
   4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
   5. Arrange for manufacturers' warranties, inspections, and service.

C. Contractor's Responsibilities:
   1. Review Owner reviewed shop drawings, product data, and samples.
   2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
   3. Handle, store, install and finish products.
   4. Repair or replace items damaged after receipt.

3.03 TRANSPORTATION AND HANDLING

A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.

B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.

C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

D. Transport and handle products in accordance with manufacturer's instructions.

E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.

H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.04 STORAGE AND PROTECTION

A. Provide protection of stored materials and products against theft, casualty, or deterioration.

B. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 74 19.
   1. Structural Loading Limitations: Handle and store products and materials so as not to exceed static and dynamic load-bearing capacities of project floor and roof areas.

C. Store and protect products in accordance with manufacturers' instructions.

D. Store with seals and labels intact and legible.

E. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.

F. For exterior storage of fabricated products, place on sloped supports above ground.

G. Provide off-site storage and protection when site does not permit on-site storage or protection.
   1. Execute a formal supplemental agreement between Owner and Contractor allowing off-site storage, for each occurrence.

H. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.

I. Comply with manufacturer's warranty conditions, if any.

J. Do not store products directly on the ground.

K. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

L. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

M. Prevent contact with material that may cause corrosion, discoloration, or staining.

N. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

O. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 61 16
VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements for Indoor-Emissions-Restricted products.

B. Requirements for VOC-Content-Restricted products.

C. Requirement for installer certification that they did not use any non-compliant products.

1.02 RELATED REQUIREMENTS

A. Section 01 30 00 - Administrative Requirements: Submittal procedures.

B. Section 01 33 29.07 - Prohibited Content Installer Certification: Form for certifying that no non-compliant products were used.

1.03 DEFINITIONS

A. Indoor-Emissions-Restricted Products: All products in the following product categories, whether specified or not:
   1. Interior paints and coatings applied on site.
   2. Interior adhesives and sealants applied on site, including flooring adhesives.
   3. Flooring.
   4. Composite wood.
   5. Products making up wall and ceiling assemblies.
   6. Thermal and acoustical insulation.
   7. Free-standing furniture.
   8. Exterior applied products (for Healthcare and Schools projects only).

B. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
   1. Interior paints and coatings applied on site.
   2. Interior adhesives and sealants applied on site, including flooring adhesives.
   3. Other products when specifically stated in the specifications.

C. Interior of Building: Anywhere inside the exterior weather barrier.

D. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.

E. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.

F. Inherently Non-Emitting Materials: Products composed wholly of minerals or metals, unless they include organic-based surface coatings, binders, or sealants; and specifically the following:
   1. Concrete.
   2. Clay brick.
   3. Metals that are plated, anodized, or powder-coated.
   4. Glass.
   5. Ceramics.
   6. Solid wood flooring that is unfinished and untreated.

1.04 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency current edition.

B. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings 2005 (Reapproved 2018).
C. BIFMA e3 - Furniture Sustainability Standard; Business and Institutional Furniture Manufacturers Association 2019.
D. CAL (CDPH SM) - Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions From Indoor Sources Using Environmental Chambers 2017, v1.2.
E. CARB (ATCM) - Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products; California Air Resources Board current edition.
F. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board 2007.
G. CHPS (HPPD) - High Performance Products Database Current Edition at www.chps.net/.
H. CRI (GLP) - Green Label Plus Testing Program - Certified Products Current Edition.
I. SCAQMD 1113 - Architectural Coatings 1977 (Amended 2016).
J. SCAQMD 1168 - Adhesive and Sealant Applications 1989 (Amended 2017).
K. SCS (CPD) - SCS Certified Products Current Edition.
L. UL (GGG) - GREENGUARD Gold Certified Products Current Edition.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.
C. Installer Certifications Regarding Prohibited Content: Require each installer of any type of product (not just the products for which VOC restrictions are specified) to certify that either 1) no adhesives, joint sealants, paints, coatings, or composite wood or agrifiber products have been used in the installation of installer's products, or 2) that such products used comply with these requirements.

1.06 QUALITY ASSURANCE

A. Indoor Emissions Standard and Test Method: CAL (CDPH SM), using Standard Private Office exposure scenario and the allowable concentrations specified in the method, and range of total VOC's after 14 days.
    1. Wet-Applied Products: State amount applied in mass per surface area.
    2. Paints and Coatings: Test tinted products, not just tinting bases.
    3. Evidence of Compliance: Acceptable types of evidence are the following;
        a. Current UL (GGG) certification.
        b. Current SCS (CPD) Floorscore certification.
        c. Current SCS (CPD) Indoor Advantage Gold certification.
        d. Current listing in CHPS (HPPD) as a low-emitting product.
        e. Current CRI (GLP) certification.
        f. Test report showing compliance and stating exposure scenario used.
    4. Product data submittal showing VOC content is NOT acceptable evidence.
    5. Manufacturer's certification without test report by independent agency is NOT acceptable evidence.
B. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
    1. Evidence of Compliance: Acceptable types of evidence are:
        a. Report of laboratory testing performed in accordance with requirements.
        b. Published product data showing compliance with requirements.

c. Certification by manufacturer that product complies with requirements.

C. Composite Wood Emissions Standard: CARB (ATCM) for ultra-low emitting formaldehyde (ULEF) resins.
1. Evidence of Compliance: Acceptable types of evidence are:
a. Current SCS "No Added Formaldehyde (NAF)" certification; www.scscertified.com.
b. Report of laboratory testing performed in accordance with requirements.
c. Published product data showing compliance with requirements.
d. Certification by manufacturer that product complies with requirements.

D. Furnishings Emissions Standard and Test Method: BIFMA e3 Sections 7.6.1 and 7.6.2, tested in accordance with BIFMA M7.1.
1. Evidence of Compliance:
a. Test report showing compliance and stating exposure scenario used.

E. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 PRODUCTS

2.01 MATERIALS

A. All Products: Comply with the most stringent of federal, State, and local requirements, or these specifications.

B. Indoor-Emissions-Restricted Products: Comply with Indoor Emissions Standard and Test Method, except for:
1. Composite Wood, Wood Fiber, and Wood Chip Products: Comply with Composite Wood Emissions Standard or contain no added formaldehyde resins.
2. Furnishings: Comply with Furnishings Emissions Standard and Test Method.
3. Inherently Non-Emitting Materials.

C. VOC-Content-Restricted Products: VOC content not greater than required by the following:
1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule.
2. Joint Sealants: SCAQMD 1168 Rule.
3. Paints and Coatings: Each color; most stringent of the following:
a. 40 CFR 59, Subpart D.
b. SCAQMD 1113 Rule.
c. CARB (SCM).

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.

B. Additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

END OF SECTION

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SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Pre-installation meetings.

C. Cutting and patching.

D. Surveying for laying out the work.

E. Cleaning and protection.

F. Starting of systems and equipment.

G. Demonstration and instruction of Owner personnel.

H. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.

I. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

A. Section 01 79 00 - Demonstration and Training: Demonstration of products and systems to be commissioned and where indicated in specific specification sections

B. Section 07 84 00 - Firestopping.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
   1. On request, submit documentation verifying accuracy of survey work.
   2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in compliance with Contract Documents.
   3. Submit surveys and survey logs for the project record.

C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
   1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences. Include design drawings and calculations for bracing and shoring.
   2. Identify demolition firm and submit qualifications.
   3. Include a summary of safety procedures.

D. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   4. Visual qualities of sight exposed elements.
   5. Work of Owner or separate Contractor.
   6. Include in request:
      a. Identification of Project.
      b. Location and description of affected work.
      c. Necessity for cutting or alteration.
      d. Description of proposed work and products to be used.
      e. Alternatives to cutting and patching.
      f. Effect on work of Owner or separate Contractor.
      g. Written permission of affected separate Contractor.

h. Date and time work will be executed.

E. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.04 QUALIFICATIONS

A. For demolition work, employ a firm specializing in the type of work required.
   1. Minimum of 5 years of documented experience.

B. For surveying work, employ a land surveyor registered in the State in which the Project is located and acceptable to Architect. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,

C. For field engineering, employ a professional engineer of the discipline required for specific service on Project, licensed in the State in which the Project is located. Employ only individual(s) trained and experienced in establishing and maintaining horizontal and vertical control points necessary for laying out construction work on project of similar size, scope and/or complexity.

D. For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

E. Use of explosives is not permitted.

F. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

G. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

H. Perform dewatering activities, as required, for the duration of the project.

I. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
   1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
   2. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.

J. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
   1. Minimize amount of bare soil exposed at one time.
   2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.

K. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.

L. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
   1. Pest Control Service: Weekly treatments.

M. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

N. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.05 COORDINATION

A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Notify affected utility companies and comply with their requirements.

C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

F. Coordinate completion and clean-up of work of separate sections.

G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.

B. Require attendance of parties directly affecting, or affected by, work of the specific section.

C. Notify Architect four days in advance of meeting date.

D. Prepare agenda and preside at meeting:
   1. Review conditions of examination, preparation and installation procedures.
   2. Review coordination with related work.

E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.04 LAYING OUT THE WORK

A. Verify locations of survey control points prior to starting work.

B. Promptly notify Architect of any discrepancies discovered.

C. Contractor shall locate and protect survey control and reference points.

D. Control datum for survey is that indicated on drawings.

E. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

F. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.

H. Utilize recognized engineering survey practices.

I. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.

J. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
   1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
   2. Grid or axis for structures.
   3. Building foundation, column locations, ground floor elevations.
   4. Controlling lines and levels required for mechanical and electrical trades.

K. Periodically verify layouts by same means.

L. Maintain a complete and accurate log of control and survey work as it progresses.

M. On completion of foundation walls and major site improvements, prepare a certified survey illustrating dimensions, locations, angles, and elevations of construction and site work.

3.05 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.06 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. Perform whatever cutting and patching is necessary to:
   1. Complete the work.
   2. Fit products together to integrate with other work.
   3. Provide openings for penetration of mechanical, electrical, and other services.
   4. Match work that has been cut to adjacent work.
   5. Repair areas adjacent to cuts to required condition.
   6. Repair new work damaged by subsequent work.
   7. Remove samples of installed work for testing when requested.
   8. Remove and replace defective and non-complying work.

C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

D. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

F. Restore work with new products in accordance with requirements of Contract Documents.

G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of the penetrated element.

I. Patching:
   1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
   2. Match color, texture, and appearance.
   3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.07 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.08 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Protect work from spilled liquids. If work is exposed to spilled liquids, immediately remove protective coverings, dry out work, and replace protective coverings.

G. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

H. Prohibit traffic from landscaped areas.

I. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.09 SYSTEM STARTUP

A. Coordinate schedule for start-up of various equipment and systems.

B. Notify Architect and Owner seven days prior to start-up of each item.

C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

E. Verify that wiring and support components for equipment are complete and tested.

F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.

G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

H. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.10 DEMONSTRATION AND INSTRUCTION

A. See Section 01 79 00 - Demonstration and Training.

3.11 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

B. Testing, adjusting, and balancing HVAC systems: See Section 23 05 93 - Testing, Adjusting, and Balancing for HVAC.

3.12 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.
   1. Clean areas to be occupied by Owner prior to final completion before Owner occupancy.

B. Use cleaning materials that are nonhazardous.

C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

F. Clean filters of operating equipment.

G. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.

H. Clean site; sweep paved areas, rake clean landscaped surfaces.

I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

J. Clean Owner-occupied areas of work.

3.13 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.
   1. Provide copies to Architect and Owner.

B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.

C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.

D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.

E. Owner will occupy all of the building as specified in Section 01 10 00.

F. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.

G. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.

H. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.

I. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

3.14 MAINTENANCE

A. Provide service and maintenance of components indicated in specification sections.

B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.

C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.

E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

A. Owner requires that this project generate the least amount of trash and waste possible.

B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.

C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.

D. Owner may decide to pay for additional recycling, salvage, and/or reuse based on Landfill Alternatives Proposal specified below.

E. Contractor shall submit periodic Waste Disposal Reports; all landfill disposal, incineration, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports.

F. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements.

G. The following sources may be useful in developing the Waste Management Plan:
   1. State Recycling Department, at location nearest to project.

H. Methods of trash/waste disposal that are not acceptable are:
   1. Burning on the project site.
   2. Burying on the project site.
   3. Dumping or burying on other property, public or private.
   4. Other illegal dumping or burying.

I. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 RELATED REQUIREMENTS

A. Section 01 30 00 - Administrative Requirements: Additional requirements for project meetings, reports, submittal procedures, and project documentation.

B. Section 01 50 00 - Temporary Facilities and Controls: Additional requirements related to trash/waste collection and removal facilities and services.

C. Section 01 60 00 - Product Requirements: Waste prevention requirements related to delivery, storage, and handling.

D. Section 01 70 00 - Execution and Closeout Requirements: Trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

1.03 DEFINITIONS

A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.

C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.

D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.

E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.

F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.

H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

I. Return: To give back reusable items or unused products to vendors for credit.

J. Reuse: To reuse a construction waste material in some manner on the project site.

K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

N. Toxic: Poisonous to humans either immediately or after a long period of exposure.

O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Landfill Alternatives Proposal: Within 10 calendar days after receipt of Notice of Award of Bid, or prior to any trash or waste removal, whichever occurs sooner, submit a projection of trash/waste that will require disposal and alternatives to landfilling, with net costs.
   1. Submit to Architect for Owner's review and approval.
   2. If Owner wishes to implement any cost alternatives, the Contract Price will be adjusted as specified elsewhere.
   3. Include an analysis of trash/waste to be generated and landfill options as specified for Waste Management Plan described below.
   4. Describe as many alternatives to landfilling as possible:
      a. List each material proposed to be salvaged, reused, or recycled.
      b. List the proposed local market for each material.
      c. State the estimated net cost resulting from each alternative, after subtracting revenue from sale of recycled or salvaged materials and landfill tipping fees saved due to diversion of materials from the landfill.
   5. Provide alternatives to landfilling for at least the following materials:
      a. Aluminum and plastic beverage containers.
      b. Corrugated cardboard.
      c. Wood pallets.
      d. Clean dimensional wood.
      e. Land clearing debris, including brush, branches, logs, and stumps.
      f. Concrete.
      g. Bricks.
      h. Concrete masonry units.
      i. Precast concrete panels.

j. Asphalt paving.
k. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
l. Paint.
m. Fluorescent lamps (light bulbs).

C. Once Owner has determined which of the landfill alternatives addressed in the Proposal above are acceptable, prepare and submit Waste Management Plan; submit within 10 calendar days after notification by Architect.

D. Waste Management Plan: Include the following information:
1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
2. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
3. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
4. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
5. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
6. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.

E. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
2. Submit Report on a form acceptable to Owner.
3. Landfill Disposal: Include the following information:
a. Identification of material.
b. Amount, in tons or cubic yards, of trash/waste material from the project disposed of in landfills.
c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
4. Incinerator Disposal: Include the following information:
a. Identification of material.
b. Amount, in tons or cubic yards, of trash/waste material from the project delivered to incinerators.
c. State the identity of incinerators, total amount of fees paid to incinerator, and total disposal cost.
d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
5. Recycled and Salvaged Materials: Include the following information for each:
a. Identification of material, including those retrieved by installer for use on other projects.

b. Amount, in tons or cubic yards, date removed from the project site, and receiving party.
c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.

6. Material Reused on Project: Include the following information for each:
   a. Identification of material and how it was used in the project.
   b. Amount, in tons or cubic yards.
   c. Include weight tickets as evidence of quantity.
7. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

PART 2 PRODUCTS

2.01 PRODUCT SUBSTITUTIONS

A. See Section 01 60 00 - Product Requirements for substitution submission procedures.

B. For each proposed product substitution, submit the following information in addition to requirements specified in Section 01 60 00:
   1. Relative amount of waste produced, compared to specified product.
   2. Cost savings on waste disposal, compared to specified product, to be deducted from the Contract Price.
   3. Proposed disposal method for waste product.
   4. Markets for recycled waste product.

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

A. See Section 01 10 00 for list of items to be salvaged from the existing building for relocation in project or for Owner.

B. See Section 01 30 00 for additional requirements for project meetings, reports, submittal procedures, and project documentation.

C. See Section 01 50 00 for additional requirements related to trash/waste collection and removal facilities and services.

D. See Section 01 60 00 for waste prevention requirements related to delivery, storage, and handling.

E. See Section 01 70 00 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.

B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Architect.

C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.

D. Meetings: Discuss trash/waste management goals and issues at project meetings.
   1. Prebid meeting.

2. Preconstruction meeting.
3. Regular job-site meetings.

E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
1. Provide containers as required.
2. Provide adequate space for pick-up and delivery and convenience to subcontractors.
3. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.

F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.

G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.

H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.

I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION

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SECTION 01 78 00
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project Record Documents.

B. Operation and Maintenance Data.

C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

A. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

B. Individual Product Sections: Specific requirements for operation and maintenance data.

C. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.

B. Operation and Maintenance Data:
   1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
   2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
   3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
   4. Submit two sets of revised final documents in final form within 10 days after final inspection.

C. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
   2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other modifications to the Contract.
   5. Reviewed shop drawings, product data, and samples.
   6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Measured depths of foundations in relation to finish first floor datum.
   2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
   4. Field changes of dimension and detail.
   5. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:
   1. Product data, with catalog number, size, composition, and color and texture designations.
   2. Information for re-ordering custom manufactured products.

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

D. Additional information as specified in individual product specification sections.

E. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:
   1. Description of unit or system, and component parts.
   2. Identify function, normal operating characteristics, and limiting conditions.
   3. Include performance curves, with engineering data and tests.
   4. Complete nomenclature and model number of replaceable parts.

B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and

maintenance of the specific products.

C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

D. Include color coded wiring diagrams as installed.

E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
   1. Include HVAC outdoor and exhaust air damper calibration strategy.
      a. Include provisions which ensure that full closure of dampers can be achieved.
   2. Include Carbon Dioxide Monitoring Protocol.
   3. Include Carbon Monoxide Monitoring Protocol.
   4. Include Frost Mitigation Strategy for ventilation heat-recovery system.

G. Provide servicing and lubrication schedule, and list of lubricants required.

H. Include manufacturer's printed operation and maintenance instructions.

I. Include sequence of operation by controls manufacturer.

J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

K. Provide control diagrams by controls manufacturer as installed.

L. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.

M. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

N. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

O. Include test and balancing reports.

P. Additional Requirements: As specified in individual product specification sections.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.

B. Where systems involve more than one specification section, provide separate tabbed divider for each system.

C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.

F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.

G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.

H. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.

I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

J. Arrangement of Contents: Organize each volume in parts as follows:
   1. Project Directory.
   2. Table of Contents, of all volumes, and of this volume.
   3. Operation and Maintenance Data: Arranged by system, then by product category.
      a. Source data.
      b. Operation and maintenance data.
      c. Field quality control data.
      d. Photocopies of warranties and bonds.
   4. Design Data: To allow for addition of design data furnished by Architect or others, provide a tab labeled "Design Data" and provide a binder large enough to allow for insertion of at least 20 pages of typed text.

3.06 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

END OF SECTION

SECTION 01 79 00
DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.01 SUMMARY

A. Demonstration of products and systems where indicated in specific specification sections.

B. Training of Owner personnel in operation and maintenance is required for:
   1. All software-operated systems.
   2. HVAC systems and equipment.
   3. Plumbing equipment.
   4. Electrical systems and equipment.
   5. Conveying systems.
   6. Landscape irrigation.

1.02 RELATED REQUIREMENTS

A. Section 01 78 00 - Closeout Submittals: Operation and maintenance manuals.

B. Other Specification Sections: Additional requirements for demonstration and training.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Training Plan: Owner will designate personnel to be trained; tailor training to needs and skill-level of attendees.
   1. Submit not less than four weeks prior to start of training.
   2. Revise and resubmit until acceptable.
   3. Provide an overall schedule showing all training sessions.
   4. Include at least the following for each training session:
      a. Identification, date, time, and duration.
      b. Description of products and/or systems to be covered.
      c. Name of firm and person conducting training; include qualifications.
      d. Intended audience, such as job description.
      e. Objectives of training and suggested methods of ensuring adequate training.
      f. Methods to be used, such as classroom lecture, live demonstrations, hands-on, etc.
      g. Media to be used, such a slides, hand-outs, etc.
      h. Training equipment required, such as projector, projection screen, etc., to be provided by Contractor.

C. Training Manuals: Provide training manual for each attendee; allow for minimum of two attendees per training session.
   1. Include applicable portion of O&M manuals.
   2. Include copies of all hand-outs, slides, overheads, video presentations, etc., that are not included in O&M manuals.
   3. Provide one extra copy of each training manual to be included with operation and maintenance data.

D. Training Reports:
   1. Identification of each training session, date, time, and duration.
   2. Sign-in sheet showing names and job titles of attendees.
   3. List of attendee questions and written answers given, including copies of and references to supporting documentation required for clarification; include answers to questions that could not be answered in original training session.
   4. Include Commissioning Authority's formal acceptance of training session.

1.04 QUALITY ASSURANCE

A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
   1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.
   2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 DEMONSTRATION - GENERAL

A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.

B. Demonstrations conducted during Functional Testing need not be repeated unless Owner personnel training is specified.

C. Demonstration may be combined with Owner personnel training if applicable.

D. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.
   2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

E. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.

3.02 TRAINING - GENERAL

A. Commissioning Authority will prepare the Training Plan based on draft plans submitted.

B. Conduct training on-site unless otherwise indicated.

C. Owner will provide classroom and seating at no cost to Contractor.

D. Do not start training until Functional Testing is complete, unless otherwise specified or approved by the Commissioning Authority.

E. Provide training in minimum two hour segments.

F. The Commissioning Authority is responsible for determining that the training was satisfactorily completed and will provide approval forms.

G. Training schedule will be subject to availability of Owner's personnel to be trained; re-schedule training sessions as required by Owner; once schedule has been approved by Owner failure to conduct sessions according to schedule will be cause for Owner to charge Contractor for personnel "show-up" time.

H. Review of Facility Policy on Operation and Maintenance Data: During training discuss:
   1. The location of the O&M manuals and procedures for use and preservation; backup copies.
   2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.
   3. Typical uses of the O&M manuals.

I. Product- and System-Specific Training:
   1. Review the applicable O&M manuals.

2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.
3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
4. Provide hands-on training on all operational modes possible and preventive maintenance.
5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
6. Discuss common troubleshooting problems and solutions.
7. Discuss any peculiarities of equipment installation or operation.
8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
9. Review recommended tools and spare parts inventory suggestions of manufacturers.
10. Review spare parts and tools required to be furnished by Contractor.
11. Review spare parts suppliers and sources and procurement procedures.

J. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

END OF SECTION

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SECTION 03 20 00
CONCRETE REINFORCING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Reinforcing steel for cast-in-place concrete.

B. Supports and accessories for steel reinforcement.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete.

1.03 REFERENCE STANDARDS

A. ACI 301 - Specifications for Structural Concrete 2016.

B. ACI 318 - Building Code Requirements for Structural Concrete and Commentary 2014 (Errata 2018).

C. ACI SP-66 - ACI Detailing Manual 2004.

D. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2020.

E. CRSI (DA4) - Manual of Standard Practice 2009.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.

C. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.

PART 2 PRODUCTS

2.01 REINFORCEMENT

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
   1. Deformed billet-steel bars.
   2. Unfinished.

B. Steel Welded Wire Reinforcement (WWR): Galvanized, deformed type; ASTM A1064/A1064M.
   1. Form: Flat Sheets.
   2. WWR Style: As indicated on drawings.

C. Reinforcement Accessories:
   1. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch.
   2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
   3. Provide stainless steel components for placement within 1-1/2 inches of weathering surfaces.

2.02 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.

B. Welding of reinforcement is not permitted.

PART 3 EXECUTION

3.01 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position.

B. Do not displace or damage vapor barrier.

C. Accommodate placement of formed openings.

D. Comply with applicable code for concrete cover over reinforcement.

3.02 FIELD QUALITY CONTROL

A. An independent testing agency, as specified in Section 01 40 00 - Quality Requirements, will inspect installed reinforcement for compliance with contract documents before concrete placement.

END OF SECTION

SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete formwork.

B. Floors and slabs on grade.

C. Joint devices associated with concrete work.

D. Miscellaneous concrete elements, including equipment pads, equipment pits, light pole bases, and flagpole bases.

E. Concrete curing.

1.02 RELATED REQUIREMENTS

A. Section 03 10 00 - Concrete Forming and Accessories: Forms and accessories for formwork.

B. Section 03 20 00 - Concrete Reinforcing.

C. Section 07 92 00 - Joint Sealants: Products and installation for sealants and joint fillers for saw cut joints and isolation joints in slabs.

D. Section 32 13 13 - Concrete Paving: Sidewalks, curbs and gutters.

1.03 REFERENCE STANDARDS

A. ACI 117 - Specifications for Tolerances for Concrete Construction and Materials 2010 (Reapproved 2015).

B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete 1991 (Reapproved 2009).

C. ACI 301 - Specifications for Structural Concrete 2016.

D. ACI 302.1R - Guide to Concrete Floor and Slab Construction 2015.

E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete 2000 (Reapproved 2009).

F. ACI 305R - Guide to Hot Weather Concreting 2010.

G. ACI 306R - Guide to Cold Weather Concreting 2016.

H. ACI 308R - Guide to External Curing of Concrete 2016.

I. ACI 318 - Building Code Requirements for Structural Concrete and Commentary 2014 (Errata 2018).

J. ACI 347R - Guide to Formwork for Concrete 2014, with Errata (2017).

K. ASTM C33/C33M - Standard Specification for Concrete Aggregates 2018.

L. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens 2021.

M. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2021a.

N. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens) 2020b.

O. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete 2020.

P. ASTM C150/C150M - Standard Specification for Portland Cement 2020.

Q. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete 2016.

R. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method 2016.

S. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete 2010a (Reapproved 2016).

T. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete 2019.

U. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete 2019.

V. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete 2019.

W. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete 2020a.

X. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete 2021.

Y. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink) 2017.

Z. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete 2019.

AA. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete 2012.

BB. ASTM D2103 - Standard Specification for Polyethylene Film and Sheeting 2015.

CC. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs 2018a.

DD. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs 2017.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.

C. Mix Design: Submit proposed concrete mix design.

D. Test Reports: Submit report for each test or series of tests specified.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301 and ACI 318.

B. Follow recommendations of ACI 305R when concreting during hot weather.

C. Follow recommendations of ACI 306R when concreting during cold weather.

PART 2 PRODUCTS

2.01 FORMWORK

A. Formwork Design and Construction: Comply with guidelines of ACI 347R to provide formwork that will produce concrete complying with tolerances of ACI 117.

B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
   1. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
   2. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

2.02 REINFORCEMENT MATERIALS

A. Comply with requirements of Section 03 20 00.

2.03 CONCRETE MATERIALS

A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
   1. Acquire cement for entire project from same source.

B. Fine and Coarse Aggregates: ASTM C33/C33M.
   1. Acquire aggregates for entire project from same source.

C. Fly Ash: ASTM C618, Class C or F.

D. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

2.04 ADMIXTURES

A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

B. Air Entrainment Admixture: ASTM C260/C260M.

C. High Range Water Reducing and Retarding Admixture: ASTM C494/C494M Type G.

D. High Range Water Reducing Admixture: ASTM C494/C494M Type F.

E. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.

F. Water Reducing Admixture: ASTM C494/C494M Type A.

2.05 ACCESSORY MATERIALS

A. Underslab Vapor Retarder:
   1. Sheet Material: ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. Single ply polyethylene is prohibited.
   2. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations.

B. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
   1. Grout: Comply with ASTM C1107/C1107M.
   2. Minimum Compressive Strength at 28 Days, ASTM C109/C109M: 7,000 pounds per square inch.

2.06 BONDING AND JOINTING PRODUCTS

A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.

B. Epoxy Bonding System:
   1. Complying with ASTM C881/C881M and of Type required for specific application.

C. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.

D. Slab Contraction Joint Device: Preformed linear strip intended for pressing into wet concrete to provide straight route for shrinkage cracking or saw cut (coordinate locations).

2.07 CURING MATERIALS

A. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309.

B. Curing Agent, Water-Cure Equivalent Type: Clear, water-based, non-film-forming, liquid-water cure replacement agent.
   1. Compressive Strength of Treated Concrete: Equal to or greater than strength after 28-day water cure when tested according to ASTM C39/C39M.

C. Curing and Sealing Compound, Moisture Emission-Reducing, Membrane-Forming: Liquid, membrane-forming, clear sealer, for application to newly-placed concrete; capable of providing adequate bond for flooring adhesives, initially and over the long term; with sufficient moisture vapor impermeability to prevent deterioration of flooring adhesives due to moisture emission.
   1. Use this product to cure and seal all slabs to receive adhesively applied flooring or roofing.
   2. Comply with ASTM C309 and ASTM C1315 Type I Class A.
   3. VOC Content: Less than 100 g/L.

D. Moisture-Retaining Sheet: ASTM C171.
   1. Curing paper, regular.
   2. Polyethylene film, white opaque, minimum nominal thickness of 4 mil, 0.004 inch.
   3. White-burlap-polyethylene sheet, weighing not less than 3.8 ounces per square yard.

E. Polyethylene Film: ASTM D2103, 4 mil, 0.004 inch thick, clear.

F. Water: Potable, not detrimental to concrete.

2.08 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.

B. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.

C. Normal Weight Concrete:
   1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 3500 pounds per square inch.
   2. Fly Ash Content: Maximum 20 percent of cementitious materials by weight.
   3. Water-Cement Ratio: Maximum 46 percent by weight.
   4. Total Air Content: 5 percent, determined in accordance with ASTM C173/C173M.
   5. Maximum Slump: 5 inches.
   6. Maximum Aggregate Size: 1.5 inch.

2.09 MIXING

A. Adding Water: Do not add water onsite without direction from concrete supplier.

PART 3 EXECUTION

3.01 PREPARATION

A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.

B. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.

C. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.
   1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
   2. Use latex bonding agent only for non-load-bearing applications.

D. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Comply with ASTM E1643. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.

3.02 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.

B. Place concrete for floor slabs in accordance with ACI 302.1R.

C. Notify Architect not less than 24 hours prior to commencement of placement operations.

D. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

E. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

F. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.03 SLAB JOINTING

A. Locate joints at a 20 feet max spacing each way and see plans.

B. Anchor joint fillers and devices to prevent movement during concrete placement.

C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.

D. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab.

3.04 FLOOR FLATNESS AND LEVELNESS TOLERANCES

A. Maximum Variation of Surface Flatness:
   1. Exposed Concrete Floors: 1/4 inch in 10 feet.
   2. Under Seamless Resilient Flooring: 1/4 inch in 10 feet.
   3. Under Carpeting: 1/4 inch in 10 feet.

B. Correct the slab surface if tolerances are less than specified.

C. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.05 CONCRETE FINISHING

A. Repair surface defects, including tie holes, immediately after removing formwork.

B. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:

C. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
   1. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI 302.1R; thin floor coverings include carpeting, resilient flooring, seamless flooring, resinous matrix terrazzo, thin set quarry tile, and thin set ceramic tile.
   2. Other Surfaces to Be Left Exposed: Trowel as described in ACI 302.1R, minimizing burnish marks and other appearance defects.

D. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains as indicated on drawings.

3.06 CURING AND PROTECTION

A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

C. Surfaces Not in Contact with Forms:
   1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
   2. Final Curing: Begin after initial curing but before surface is dry.

3.07 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.

B. Provide free access to concrete operations at project site and cooperate with appointed firm.

C. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

3.08 DEFECTIVE CONCRETE

A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.

B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.

C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

END OF SECTION

SECTION 04 42 00
EXTERIOR STONE CLADDING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cut dolomitic limestone veneer at exterior walls.

B. Metal anchors and supports.

C. Sealing exterior joints.

D. Pointing interior joints.

1.02 RELATED REQUIREMENTS

A. Section 07 92 00 - Joint Sealants: Sealing perimeter and expansion joints in interior stone work.

1.03 REFERENCE STANDARDS

A. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications 2020a.

B. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2015.

C. ASTM C270 - Standard Specification for Mortar for Unit Masonry 2019.

D. ASTM C568/C568M - Standard Specification for Limestone Dimension Stone 2015.

E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2018.

F. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants 2018.

G. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants 2018.

H. ILI (HB) - Indiana Limestone Handbook 2007.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on stone, mortar products, and sealant products.

C. Shop Drawings: Indicate layout, pertinent dimensions, anchorages, head, jamb, and sill opening details, and jointing methods.

D. Samples: Submit two stone samples 12 by 12 inch in size, illustrating color range and texture, markings, surface finish.

E. Samples: Submit mortar color samples.

F. Installation Instructions: Submit stone fabricator's installation instructions and field erection or setting drawings; indicate panel identifying marks and locations on setting drawings.

G. Stone Fabricator's Qualification Statement.

H. Installer's Qualification Statement.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with ILI Indiana Limestone Handbook.

B. Stone Fabricator: Company specializing in fabricating cut stone with minimum ten years of documented experience.

C. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years of experience.

1.06 MOCK-UP

A. Construct stone wall mock-up, 6 feet long by 6 feet wide, including stone anchor accessories, sill and head flashings , window frame , corner condition , typical control joint .

B. Locate where directed.

C. Mock-up may remain as part of the Work.

1.07 FIELD CONDITIONS

A. During temporary storage on site, at the end of working day, and during rainy weather, cover stone work exposed to weather with non-staining waterproof coverings, securely anchored.

PART 2 PRODUCTS

2.01 STONE

A. Dolomitic Limestone: Natural variety.
   1. Quarry: Fulton County Stoneworks.
   2. Stone Veneer: Limestone Slab Bask
   3. Stone: Type 2; Dimension Stone.

2.02 MORTAR

A. Mortar: ASTM C270, Type N, Proportion specification, using Portland cement of white color.

2.03 ANCHORS AND ACCESSORIES

A. Anchors and Other Components in Contact with Stone: Stainless steel, ASTM A666 Type 304.
   1. Sizes and configurations: As required for vertical and horizontal support of stone and applicable loads.
   2. Wire ties are not permitted.

B. Support Components not in Contact with Stone: Stainless steel, ASTM A240/A240M Type 304.

C. Setting Buttons and Shims: Lead type.

D. Joint Sealant: ASTM C920 silicone sealant with movement capability of at least plus/minus 25 percent and non-staining to stone when tested in accordance with ASTM C1248.

E. Joint Backer Rod: ASTM C1330 open cell polyurethane of size 40 to 50 percent larger in diameter than joint width.

F. Cleaning Solution: Type that will not harm stone, joint materials, or adjacent surfaces.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that support work and site conditions are ready to receive work of this section.

B. Verify that items built-in under other sections are properly located and sized.

3.02 INSTALLATION

A. Erect stone in accordance with stone supplier's instructions and erection drawings.

B. Set stone with a consistent joint width of 3/8 inch.

C. Install anchors and place setting buttons to support stone and to establish joint dimensions.

D. Joints in Exterior Work: Seal joints with joint sealant over backer rod, following sealant manufacturer's instructions; tool sealant surface to concave profile.

E. Joints in Interior Work: Leave perimeter joints and expansion joints open for sealant; fill other joints with pointing mortar; pack and work into voids; tool surface to concave joint.

3.03 CUTTING AND FITTING

A. Obtain approval prior to cutting or fitting any item not so indicated on drawings.

B. Do not impair appearance or strength of stone work by cutting.

3.04 CLEANING

A. Remove excess joint material upon completion of work.

B. Clean soiled surfaces with cleaning solution.

C. Use non-metallic tools in cleaning operations.

END OF SECTION

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SECTION 05 50 00
METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated steel and aluminum items.

B. Wall and Door Protection.

1.02 RELATED REQUIREMENTS

A. Section 09 90 00 - Painting and Coating: Paint finish.

1.03 REFERENCE STANDARDS

A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum 2014 (2015 Errata).

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.

C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless 2020.

D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.

E. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates 2018.

F. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength 2021.

G. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes 2021.

H. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing 2014.

I. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.

J. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2015.

K. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2014.

L. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric) 2014.

M. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2020.

N. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength 2019, with Editorial Revision (2020).

O. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination 2012.

P. AWS D1.1/D1.1M - Structural Welding Code - Steel 2020.

Q. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer 1999 (Ed. 2004).

R. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic") 2002 (Ed. 2004).

S. SSPC-SP 2 - Hand Tool Cleaning 2018.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
   1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

A. Steel Sections: ASTM A36/A36M.

B. Steel Tubing: ASTM A500/A500M Grade B cold-formed or hot rolled, ASTM A501/A501M ; seamless structural tubing.

C. Plates: ASTM A283/A283M.

D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.

E. Cold-Rolled Carbon Steel Sheets: ASTM A653/A653M . Provide "Commercial" galvanizing, for exterior use.

F. Stainless Steel, General: ASTM A666, Type 304.

G. Mechanical Fasteners: Same material as or compatible with materials being fastened; type consistent with design and specified quality level.

H. Bolts, Nuts, and Washers: ASTM A307, Grade A, plain.

I. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.

J. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

K. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

L. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 MATERIALS - ALUMINUM

A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.

B. Sheet Aluminum: ASTM B209 (ASTM B209M), 5052 alloy, H32 or H22 temper.

C. Bolts, Nuts, and Washers: Stainless steel.

2.03 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

D. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

E. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.04 FABRICATED ITEMS

A. Corner Guards - Surface Mounted
   1. Material: Stainless Steel - Brushed.
   2. Width of Wings: 3 inches.

3. Corner: Square.
4. Mounting Attachment: Adhesive or attachment hardware appropriate to substrate.

B. Door Protection: Stainless Steel
1. Size to be determined by Architect.

C. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; prime paint finish.

2.05 FINISHES - STEEL

A. Prime paint steel items.
1. Exceptions: Galvanize items to be embedded in concrete and items to be embedded in masonry.
2. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.

B. Prepare surfaces to be primed in accordance with SSPC-SP2.

C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

D. Prime Painting: One coat.

E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.

F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.06 FINISHES - ALUMINUM

A. Exterior Aluminum Surfaces: Class I color anodized.

B. Interior Aluminum Surfaces: Class I natural anodized.

C. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

2.07 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch in 48 inches.

E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Perform field welding in accordance with AWS D1.1/D1.1M.

D. Obtain approval prior to site cutting or making adjustments not scheduled.

E. After erection, prime welds, abrasions, and surfaces not shop primed , except surfaces to be in contact with concrete.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

SECTION 06 10 00
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural dimension lumber framing.
B. Nonstructural dimension lumber framing.
C. Rough opening framing for doors, windows, and roof openings.
D. Sheathing.
E. Subflooring.
F. Underlayment.
G. Preservative treated wood materials.
H. Miscellaneous framing and sheathing.
I. Concealed wood blocking, nailers, and supports.
J. Miscellaneous wood nailers, furring, and grounds.

1.02 RELATED REQUIREMENTS

A. Section 06 15 00 - Wood Decking.
B. Section 06 17 53 - Shop-Fabricated Wood Trusses.
C. Section 07 62 00 - Sheet Metal Flashing and Trim: Sill flashings.
D. Section 09 21 16 - Gypsum Board Assemblies: Gypsum-based sheathing.

1.03 REFERENCE STANDARDS

A. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing 2003 (Reapproved 2017).
B. ASTM D3498 - Standard Specification for Adhesives for Field-Gluing Wood Structural Panels (Plywood or Oriented Strand Board) to Wood Based Floor System Framing 2019a.
C. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies 2018.
D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.
E. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials 2016.
F. AWPA U1 - Use Category System: User Specification for Treated Wood 2018.
G. ICC (IBC) - International Building Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
H. ICC-ES AC310 - Acceptance Criteria for Water-resistive Membranes Factory-bonded to Wood-based Structural Sheathing, Used as Water-Resistive Barriers 2008, with Editorial Revision (2015).
I. PS 1 - Structural Plywood 2009 (Revised 2019).
J. PS 2 - Performance Standard for Wood-Based Structural-Use Panels 2010.
K. PS 20 - American Softwood Lumber Standard 2020.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
B. Product Data: Provide technical data on wood preservative materials.

C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Correct defective work within a two-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Basis of Design Products: Specific brand names used in drawings and specifications are used to establish design and quality standards, performance criteria, technical characteristics, or other salient requirements. It is not intended to restrict products that are equal to these characteristics. Products that clearly and demonstrably meet the requirements may also be acceptable.

B. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. Species: Douglas Fir or Southern Pine, unless otherwise indicated.
   2. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Sizes: Nominal sizes as indicated on drawings, S4S.

B. Moisture Content: Kiln-dry or MC15.

C. Stud Framing (2 by 2 through 2 by 6):
   1. Species: Douglas Fir or Southern Pine or approved equal.
   2. Grade: No. 2.

D. Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16):
   1. Machine stress-rated (MSR) as follows:
      a. Fb-single; minimum extreme fiber stress in bending: 1350 psi.
      b. E; minimum modulus of elasticity: 1,300,000 psi.
   2. Species: Douglas Fir or Southern Pine.
   3. Grade: No. 2.

E. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade.
   2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

A. Subfloor/Underlayment Combination (For Attic Walkway): PS 2 type, rated Single Floor.
   1. Bond Classification: Exterior.
   2. Span Rating: 48.
   3. Performance Category: 3/4 PERF CAT.
   4. Edges: Square.

B. Underlayment, For Attic space: APA Underlayment; plywood, Exposure 2, 3/4 inch thick.

C. Roof Sheathing: Oriented strand board or plywood structural panel; PS 2.
   1. Grade: Structural 1 Sheathing.
   2. Bond Classification: Exposure 1.
   3. Performance Category: 5/8 PERF CAT.
   4. Span Rating: 40/20.

5. Edges: Square.
6. Exposure Time: Sheathing will not delaminate or require sanding due to moisture absorption from exposure to weather for up to 500 days.
7. Provide fastening guide on top panel surface with separate markings indicating fastener spacing for 16 inches and 24 inches on center, respectively.

D. Wall Sheathing, ZIP SYSTEM: Oriented strand board structural wood panel with factory laminated water-resistive and air barrier layer.
1. Sheathing Panel: PS 2, Exposure 1.
   a. Size: 4 feet wide by 8 feet long.
   b. Grade: Structural 1 Sheathing.
   c. Performance Category: 5/8 PERF CAT.
   d. Span Rating: 40/20.
   e. Edge Profile: Tongue and groove.
2. Integral Water-Resistive and Air Barrier: Sheet material qualifying as a Grade D water resistive barrier; complying with ICC-ES AC310.
3. Water Vapor Permeance of Water Resistive and Air Barrier: 12 to 16 perms, minimum, when tested in accordance with ASTM E96/E96M Procedure B.
4. Maximum Allowable Air Leakage of Assembly, complying with ASTM E2357:
   a. Infiltration: 0.0072 cfm per square foot, maximum, at a pressure differential of 1.57 pounds per square foot.
   b. Exfiltration: 0.0023 cfm per square foot, maximum, at a pressure differential of 1.57 pounds per square foot.
5. Provide fastening guide on top panel surface with separate markings indicating fastener spacing for 16 inches and 24 inches on center, respectively.
6. Seam Tape: Manufacturer's standard pressure-sensitive, self-adhering, cold-applied, seam tape.
7. Warranty: Manufacturer's standard 30 year limited system warranty of:
   a. Performance: Panel and tape resistance to water penetration; tape adhesion.
   b. Material: Free from manufacturing defects and panel delamination.
8. Manufacturers:
   a. Huber Engineered Woods, LLC; ZIP System Roof/Wall Sheathing and ZIP System Seam Tape: www.huberwood.com/#sle; or equal.
   b. Substitutions: See Section 01 60 00 - Product Requirements.

E. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

2.04 ACCESSORIES

A. Fasteners and Anchors:
1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.

B. Sill Gasket on Top of Foundation Wall: 1/4 inch thick, plate width, closed cell plastic foam from continuous rolls.

C. Sill Flashing: As specified in Section 07 62 00.

D. Subfloor Adhesives: Waterproof, air cure type, cartridge dispensed; adhesives designed for subfloor applications and complying with either ASTM C557 or ASTM D3498.

2.05 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance

with AWPA standards.

B. Preservative Treatment:
   1. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
      a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
      b. Treat lumber in contact with roofing, flashing, or waterproofing.
      c. Treat lumber in contact with masonry or concrete.
      d. Treat lumber less than 18 inches above grade.

PART 3 EXECUTION

3.01 PREPARATION

A. Where wood framing bears on cementitious foundations, install full width sill flashing continuous over top of foundation, lap ends of flashing minimum of 4 inches and seal.

B. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.

C. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 FRAMING INSTALLATION

A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.

B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.

C. Install structural members full length without splices unless otherwise specifically detailed.

D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AWC (WFCM) Wood Frame Construction Manual.

E. Install horizontal spanning members with crown edge up and not less than 1-1/2 inches of bearing at each end.

F. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.

G. Frame wall openings with two or more studs at each jamb unless noted; support headers on cripple studs.

3.04 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.

C. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

D. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

E. Provide the following specific nonstructural framing and blocking:
   1. Cabinets and shelf supports.
   2. Wall brackets.
   3. Handrails.
   4. Grab bars.
   5. Towel and bath accessories.
   6. Wall-mounted door stops.
   7. Chalkboards and marker boards.
   8. Wall paneling and trim.
   9. Joints of rigid wall coverings that occur between studs.

3.05 ROOF-RELATED CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

3.06 INSTALLATION OF CONSTRUCTION PANELS

A. Underlayment: Secure to subflooring with nails and glue.
   1. Place building paper between floor underlayment and subflooring.

B. Roof Sheathing: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.
   1. Install according to manufacturer's instructions.
   2. Nail panels to framing; staples are not permitted.

C. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
   1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
   2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
   3. Install adjacent boards without gaps.
   4. Size and Location: As indicated on drawings.

D. Wall Sheathing Sheathing with Laminated Water-Resistive Barrier and Air Barrier: Secure to studs as recommended by manufacturer.
   1. Install with laminated water-resistive and air barrier on exterior side of sheathing.
   2. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.
   3. Use only mechanically attached and drainable EIFS and exterior insulation with wall sheathing with laminated water-resistive and air barrier.
   4. Apply manufacturer's standard seam tape to joints between sheathing panels. Use tape gun or hard rubber roller as recommended by manufacturer.

3.07 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Variation from Plane, Other than Floors: 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.08 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

3.09 CLEANING

A. Waste Disposal: See Section 01 74 19 - Construction Waste Management and Disposal.

1. Comply with applicable regulations.
2. Do not burn scrap on project site.
3. Do not burn scraps that have been pressure treated.
4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 06 15 00
WOOD DECKING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Plywood structural wood decking.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Bearing support.

1.03 REFERENCE STANDARDS

A. PS 1 - Structural Plywood 2009 (Revised 2019).

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide technical data on wood preservative materials.

C. Shop Drawings: Indicate deck framing system, loads and cambers, bearing details, and framed openings.

PART 2 PRODUCTS

2.01 WOOD MATERIALS

A. Wood fabricated from old growth timber is not permitted.

B. Plywood Decking: PS 1 veneer plywood; APA Rated Sheathing, Span Rating 40/20; Exterior grade;1 A interior veneer appearance grade; unsanded.

2.02 ACCESSORIES

A. Fasteners and Anchors:
   1. Fastener Type and Finish: Hot-dipped galvanized steel for high humidity and preservative-treated wood locations, unfinished steel elsewhere.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that support framing is ready to receive decking.

3.02 PREPARATION

A. Coordinate placement of bearing items.

3.03 INSTALLATION - PLYWOOD DECKING

A. Install decking perpendicular to framing members with ends staggered over firm bearing.

B. Allow expansion space at edges and ends.

3.04 TOLERANCES

A. Surface Flatness of Decking Without Load: 1/4 inch in 10 feet maximum, and 1/2 inch in 30 feet maximum.

END OF SECTION

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SECTION 06 17 53
SHOP-FABRICATED WOOD TRUSSES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated wood trusses for roof framing.

B. Bridging, bracing, and anchorage.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Installation requirements for miscellaneous framing.

1.03 REFERENCE STANDARDS

A. ANSI/TPI 1 - National Design Standard for Metal-Plate-Connected Wood Truss Construction 2014.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.

C. SPIB (GR) - Grading Rules 2014.

D. TPI BCSI 1 - Building Component Safety Information Booklet: The Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses 2018.

E. TPI DSB-89 - Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses 1989.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's data sheets on plate connectors, bearing plates, and metal bracing components.

C. Shop Drawings: Show truss configurations, sizes, spacing, size and type of plate connectors, cambers, framed openings, bearing and anchor details, and bridging and bracing.
   1. Include identification of engineering software used for design.
   2. Provide shop drawings stamped or sealed by design engineer.
   3. Submit design calculations.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Handle and erect trusses in accordance with TPI BCSI 1.

B. Store trusses in vertical position resting on bearing ends.

PART 2 PRODUCTS

2.01 TRUSSES

A. Wood Trusses: Designed and fabricated in accordance with ANSI/TPI 1 and TPI DSB-89 to achieve structural requirements indicated.
   1. Species and Grade: Southern Pine, SPIB (GR) Grade 2.
   2. Species and Grade: Douglas Fir, [_____] Grade 2.
   3. Connectors: Steel plate.
   4. Structural Design: Comply with applicable code for structural loading criteria.
   5. Roof Deflection: 1/240, maximum.

2.02 MATERIALS

A. Lumber:
   1. Moisture Content: Between 7 and 9 percent.
   2. Lumber fabricated from old growth timber is not permitted.

B. Steel Connectors: Hot-dipped galvanized steel sheet, ASTM A653/A653M Structural Steel (SS) Grade 33/230, with G90/Z275 coating; die stamped with integral teeth; thickness as indicated.

C. Truss Bridging: Type, size and spacing recommended by truss manufacturer.

2.03 ACCESSORIES

A. Fasteners: Electrogalvanized steel, type to suit application.

B. Bearing Plates: Electrogalvanized steel.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that supports and openings are ready to receive trusses.

3.02 PREPARATION

A. Coordinate placement of bearing items.

3.03 ERECTION

A. Install trusses in accordance with manufacturer's instructions and TPI DSB-89 and TPI BCSI 1; maintain a copy of each TPI document on site until installation is complete.

B. Set members level and plumb, in correct position.

C. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure plumb, and in true alignment until completion of erection and installation of permanent bracing.

D. Do not field cut or alter structural members without approval of Architect.

E. Install permanent bridging and bracing.

F. Install headers and supports to frame openings required.

G. Frame openings between trusses with lumber in accordance with Section 06 10 00.

H. Coordinate placement of decking with work of this section.

3.04 TOLERANCES

A. Framing Members: 1/2 inch maximum, from true position.

END OF SECTION

SECTION 06 41 00
ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Specially fabricated cabinet units.

B. Hardware.

C. Preparation for installing utilities.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.

C. Section 12 36 00 - Countertops.

1.03 REFERENCE STANDARDS

A. BHMA A156.9 - American National Standard for Cabinet Hardware 2015.

B. NEMA LD 3 - High-Pressure Decorative Laminates 2005.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting not less than one week before starting work of this section; require attendance by all affected installers.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.

C. Product Data: Provide data for hardware accessories.

D. Samples: Submit actual samples of architectural cabinet construction, minimum 12 inches square, illustrating proposed cabinet, countertop, and shelf unit substrate and finish.

E. Samples: Submit actual sample items of proposed pulls, hinges, shelf standards, and locksets, demonstrating hardware design, quality, and finish.

F. Certificate: Submit labels and certificates required by quality assurance and quality control programs.

1.06 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
   1. Company with at least one project in the past 5 years with value of woodwork within 20 percent of cost of woodwork for this Project.
   2. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.

B. Quality Certification:
   1. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
   2. Provide designated labels on shop drawings as required by certification program.
   3. Provide designated labels on installed products as required by certification program.
   4. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.
   5. Replace, repair, or rework all work for which certification is refused.

1.07 MOCK-UP

A. Provide mock-up of typical base cabinet, wall cabinet, and countertop, including hardware, finishes, and plumbing accessories.

B. See Section 01 40 00 - Quality Requirements for additional requirements.

C. Locate where directed.

D. Mock-up may remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Protect units from moisture damage.

1.09 FIELD CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.01 CABINETS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Plastic Laminate Faced Cabinets: Custom grade.

C. Cabinets:
   1. Layout for Cabinet and Door Fronts: Flush panel.
      a. Custom Grade: Doors, drawer fronts and false fronts wood grain to run and match vertically within each cabinet unit.
   2. Cabinet Design Series: As indicated on drawings.
   3. Cabinet Style: Flush overlay.
   4. Cabinet Doors and Drawer Fronts: Flush style.
   5. Drawer Construction Technique: As recommended by fabricator.

2.02 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

2.03 LAMINATE MATERIALS

A. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.

B. Provide specific types as indicated.
   1. Horizontal Surfaces: HGS, 0.048 inch nominal thickness, through color, color as selected, finish as selected.
   2. Vertical Surfaces: VGS, 0.028 inch nominal thickness, through color, color as selected, finish as selected.
   3. Cabinet Liner: CLS, 0.020 inch nominal thickness, through color, color as selected, finish as selected.
   4. Laminate Backer: BKL, 0.020 inch nominal thickness, undecorated; for application to concealed backside of panels faced with high pressure decorative laminate.
   5. Melamine (MCP): Thermally fused melamine laminate, NEMA Test LD 3-1995.
      a. Use in locations not exposed to view, as indicated on Drawings.
      b. Color: White.

2.04 COUNTERTOPS

A. Countertops are specified in Section 12 36 00.

2.05 ACCESSORIES

A. Adhesive: Type recommended by AWI/AWMAC to suit application.

B. Plastic Edge Banding: 3MM Extruded PVC, flat shaped; smooth finish; self locking serrated tongue; of width to match component thickness.
   1. Color: As selected by Architect from manufacturer's standard range.

C. Fasteners: Size and type to suit application.

D. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.

E. Concealed Joint Fasteners: Threaded steel.

F. Grommets: Standard plastic, painted metal, or rubber grommets for cut-outs, in color to match adjacent surface.

2.06 HARDWARE

A. Hardware shall comply with ADA Accessibility Guidelines, 28 CFR Part 36, Appendix A. Hardware and operating mechanisms shall have a shape that is easy to grasp and shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to operate the hardware, doors or drawers shall be no greater than 5 pounds force.

B. Hardware: BHMA A156.9, types as indicated for quality grade specified.

C. Adjustable Shelf Supports: Standard side-mounted system using recessed metal shelf standards and coordinated self rests, polished chrome or satin chrome finish, for nominal 1 inch spacing adjustments.

D. Drawer and Door Pulls: "U" shaped wire pull, steel with satin finish, 4 inch centers.

E. Cabinet Locks: Keyed cylinder, two keys per lock, master keyed, steel with satin finish.

F. Catches: Magnetic.

G. Drawer Slides:
   1. Type: Full extension.
   2. Static Load Capacity: Commercial grade.
   3. Mounting: Side mounted.
   4. Stops: Integral type.
   5. Features: Provide self closing/stay closed type.
   6. Manufacturers:
      a. Accuride International, Inc: www.accuride.com/#sle.
      b. Blum, Inc: www.blum.com/#sle.
      c. Grass America Inc: www.grassusa.com/#sle.
      d. Knape & Vogt Manufacturing Company: www.knapeandvogt.com/#sle.
      e. Substitutions: See Section 01 60 00 - Product Requirements.

H. Hinges: European style concealed self-closing type, steel with satin finish.
   1. Manufacturers:
      a. Blum, Inc: www.blum.com/#sle.
      b. Grass America Inc: www.grassusa.com/#sle.
      c. Hardware Resources: www.hardwareresources.com/#sle.
      d. Hettich America, LP: www.hettich.com/#sle.
      e. Substitutions: See Section 01 60 00 - Product Requirements.

2.07 FABRICATION

A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.

B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.

C. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.

D. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.
   1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
   2. Cap exposed plastic laminate finish edges with material of same finish and pattern.

E. Mechanically fasten back splash to countertops as recommended by laminate manufacturer at 16 inches on center.

F. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.

2.08 SHOP FINISHING

A. Sand work smooth and set exposed nails and screws.

B. For opaque finishes, apply wood filler in exposed nail and screw indentations and sand smooth.

C. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
   1. Opaque:
      a. Color: As selected by Architect.
      b. Sheen: As selected by Architect.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with work of this section.

3.02 INSTALLATION

A. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.

B. Use fixture attachments in concealed locations for wall mounted components.

C. Use concealed joint fasteners to align and secure adjoining cabinet units.

D. Secure cabinets to floor using appropriate angles and anchorages.

E. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

3.03 ADJUSTING

A. Adjust installed work.

B. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

SECTION 06 83 16
FIBERGLASS REINFORCED PANELING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fiberglass reinforced plastic panels.

B. Trim.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

1.03 REFERENCE STANDARDS

A. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics 2010 (Reapproved 2018).

B. ASTM D2583 - Standard Test Method for Indentation Hardness of Rigid Plastics by Means of Barcol Impressor 2013a.

C. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber 2016.

D. ASTM D5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels 2017.

E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.

F. FDA Food Code - Chapter 6 - Physical Facilities Current Edition.

G. FM 4880 - Approval Standard for Class 1 Fire Rating of Building Panels or Interior Finish Materials 2015.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Samples: Submit two samples 4 by 4 inch in size illustrating material and surface design of panels.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Panels: Quantity equal to 5 percent of total installed.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store panels flat, indoors, on a clean, dry surface. Remove packaging and allow panels to acclimate to room temperature for 48 hours prior to installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fiberglass Reinforced Plastic Panels:
   1. Crane Composites, Inc: www.cranecomposites.com/#sle.
   2. Marlite, Inc: www.marlite.com/#sle.
   3. Nudo Products, Inc: www.nudo.com/#sle.
   4. Panolam Industries International, Inc; Panolam FRP: www.panolam.com/#sle.
   5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PANEL SYSTEMS

A. Wall Panels:

1. Panel Size: 4 by 9 feet.
2. Panel Thickness: 0.10 inch.
3. Color: As selected by Architect.
4. Attachment Method: Adhesive only, with trim and sealant in joints.

2.03 MATERIALS

A. Panels: Fiberglass reinforced plastic (FRP), complying with ASTM D5319.
   1. Surface Burning Characteristics: Maximum flame spread index of 25 and smoke developed index of 450; when system tested in accordance with ASTM E84.
   2. Class 1 fire rated when tested in accordance with FM 4880.
   3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   4. Scratch Resistance: Barcol hardness score greater than 35, when tested in accordance with ASTM D2583.
   5. Impact Strength: Greater than 6 ft lb force per inch, when tested in accordance with ASTM D256.
   6. Surface Characteristics and Cleanability: Provide products that are smooth, durable, and easily cleanable, in compliance with FDA Food Code, Chapter 6 - Physical Facilities.

B. Trim: Vinyl; color coordinating with panel.

C. Adhesive: Type recommended by panel manufacturer.

D. Sealant: Type recommended by panel manufacturer; white.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions and substrate flatness before starting work.

B. Verify that substrate conditions are ready to receive the work of this section.

3.02 INSTALLATION - WALLS

A. Install panels in accordance with manufacturer's instructions.

B. Cut and drill panels with carbide tipped saw blades, drill bits, or snips.

C. Apply adhesive to the back side of the panel using trowel as recommended by adhesive manufacturer.

D. Apply panels to wall with seams plumb and pattern aligned with adjoining panels.

E. Install panels with manufacturer's recommended gap for panel field and corner joints.

F. Place trim on panel before fastening edges, as required.

G. Fill channels in trim with sealant before attaching to panel.

H. Install trim with adhesive and screws or nails, as required.

I. Seal gaps at floor, ceiling, and between panels with applicable sealant to prevent moisture intrusion.

J. Remove excess sealant after paneling is installed and prior to curing.

END OF SECTION

SECTION 07 13 00
SHEET WATERPROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sheet Waterproofing:
   1. Composite HDPE/Bentonite sheet membrane.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Concrete substrate.

B. Section 07 21 00 - Thermal Insulation: Insulation used for protective cover.

1.03 REFERENCE STANDARDS

A. ASTM D5295/D5295M - Standard Guide for Preparation of Concrete Surfaces for Adhered (Bonded) Membrane Waterproofing Systems 2018.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data for membrane.

C. Certificate: Certify that products meet or exceed specified requirements.

D. Manufacturer's Installation Instructions: Indicate special procedures.

E. Manufacturer's Qualification Statement.

F. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

G. Specimen Warranty.

1.05 QUALITY ASSURANCE

A. Membrane Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

1.06 FIELD CONDITIONS

A. Maintain ambient temperatures above 40 degrees F for 24 hours before and during application and until liquid or mastic accessories have cured.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Contractor shall correct defective Work within a five year period after Date of Substantial Completion; remove and replace materials concealing waterproofing at no extra cost to Owner.

PART 2 PRODUCTS

2.01 MEMBRANE MATERIALS

A. Composite HDPE/Bentonite Sheet Membrane: Comprised of black/gray HDPE and granular bentonite with spun polypropylene fabric facing.
   1. Thickness: 150 mil, 0.150 inch, minimum.
   2. Sheet Width: 4 ft, minimum.
   3. With compatible waterstop devices and 4 inch wide rubberized asphalt seam tape.
   4. Manufacturers:
      a. CETCO, a division of Minerals Technologies Inc; ULTRASEAL: www.mineralstech.com/#sle.
      b. Epro Services, Inc; Bento-Pro Plus: www.eproserv.com/#sle.
      c. Tremco Commercial Sealants & Waterproofing; Paraseal: www.tremcosealants.com/#sle.

d. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ACCESSORIES

A. Seaming Materials: As recommended by membrane manufacturer.

B. Membrane Sealant: As recommended by membrane manufacturer..

C. Sealant for Cracks and Joints In Substrates: Resilient elastomeric joint sealant compatible with substrates and waterproofing materials.

D. Protection Board: Rigid insulation as specified in Section 07 21 00.

E. Drainage Panel: Drainage layer with geotextile filter fabric on earth side.
   1. Composition: Dimpled polystyrene, polyethylene, or polypropylene core; polypropylene filter fabric.

F. Flexible Flashings: Type recommended by membrane manufacturer.

G. Termination Bars: Aluminum; compatible with membrane and adhesives.

H. Adhesives: As recommended by membrane manufacturer.

I. Thinner and Cleaner: As recommended by adhesive manufacturer, compatible with sheet membrane.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions are acceptable prior to starting this work.

B. Verify substrate surfaces are durable; free of matter detrimental to adhesion or application of waterproofing system.

C. Verify items that penetrate surfaces to receive waterproofing are securely installed.

3.02 PREPARATION

A. Protect adjacent surfaces from damage not designated to receive waterproofing.

B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions; vacuum substrate clean.

C. Do not apply waterproofing to surfaces unacceptable to membrane manufacturer.

D. Fill non-moving joints and cracks with a filler compatible with waterproofing materials.

E. Seal moving cracks with sealant and non-rigid filler, using procedures recommended by sealant and waterproofing manufacturers.

F. Prepare building expansion joints at locations as indicated on drawings.

G. Surfaces for Adhesive Bonding: Apply surface conditioner at a rate recommended by manufacturer, and protect conditioner from rain or frost until dry.

H. Concrete Surfaces for Adhesive Bonding: Prepare concrete substrate according to ASTM D5295/D5295M.
   1. Remove substances that inhibit adhesion including form release agents, curing compounds admixtures, laitance, moisture, dust, dirt, grease and oil.
   2. Repair surface defects including honeycombs, fins, tie holes, bug holes, sharp offsets, rutted cracks, ragged corners, deviations in surface plane, spalling and delaminations, as described in the reference standard.
   3. Remove and replace areas of defective concrete as specified in Section 03 30 00.
   4. Prepare concrete for adhesive bonded waterproofing using mechanical or chemical methods described in the referenced standard.
   5. Test concrete surfaces as described in the referenced standards. Verify surfaces are ready to receive adhesive bonded waterproofing membrane system.

3.03 INSTALLATION - MEMBRANE

A. Install membrane waterproofing in accordance with manufacturer's instructions and NRCA (WM) applicable requirements.

B. Roll out membrane, and minimize wrinkles and bubbles.

C. Overlap edges and ends, minimum 3 inches, seal permanently waterproof by method recommended by manufacturer, and apply uniform bead of sealant to joint edge.

D. Reinforce membrane with multiple thickness of membrane material over joints, whether joints are static or dynamic.

E. Weather lap joints on sloped substrate in direction of drainage, and seal joints and seams.

F. Flexible Flashings: Seal items watertight that penetrate through waterproofing membrane with flexible flashings.

G. Seal membrane and flashings to adjoining surfaces.

3.04 INSTALLATION - DRAINAGE PANEL AND PROTECTION BOARD

A. Place drainage panel directly against membrane, butt joints, place to encourage drainage downward. Scribe and cut boards around projections, penetrations, and interruptions.

B. Place protection board directly against drainage panel; butt joints. Scribe and cut boards around projections, penetrations, and interruptions.

C. Adhere protection board to substrate with compatible adhesive.

3.05 FIELD QUALITY CONTROL

A. Upon completion of horizontal membrane installation, dam installation area in preparation for flood testing.
   1. Flood to minimum depth of 1 inch with clean water, and after 48 hours inspect for leaks.
   2. If leaking is found, remove water, repair leaking areas with new waterproofing materials as directed by Architect; repeat flood test, and repair damage to building.
   3. When area is proven watertight, drain water and remove dam.

3.06 PROTECTION

A. Do not permit traffic over unprotected or uncovered membrane.

END OF SECTION

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SECTION 07 21 00
THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Board insulation at perimeter foundation wall.

B. Batt insulation in exterior wall and roof construction.

C. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

1.02 REFERENCE STANDARDS

A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation 2019.

B. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing 2017.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.

D. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C 2019a.

E. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components 2019.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

1.04 FIELD CONDITIONS

A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 APPLICATIONS

A. Insulation at Perimeter of Foundation: Extruded polystyrene (XPS) board.

B. Insulation in Wood Framed Walls: Batt insulation no vapor retarder.

2.02 FOAM BOARD INSULATION MATERIALS

A. Extruded Polystyrene (XPS) Board Insulation: Complies with ASTM C578 with either natural skin or cut cell surfaces.
   1. Type and Compressive Resistance: Type IV, 25 psi (173 kPa), minimum.
   2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
   3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
   4. Type and Thermal Resistance, R-value: Type IV, 5.0 (0.88) per 1 inch thickness at 75 degrees F mean temperature.
   5. Complies with fire resistance requirements indicated on drawings as part of an exterior non-load-bearing exterior wall assembly when tested in accordance with NFPA 285.
   6. Board Edges: Square.

7. Type and Water Absorption: Type IV, 0.3 percent by volume, maximum, by total immersion.
8. Products:
   a. Dow Chemical Company; STYROFOAM Square Edge: www.dowbuildingsolutions.com/#sle.
   b. Kingspan Insulation LLC; GreenGuard XPS Type IV, 25 psi: www.kingspan.com/#sle.
   c. Owens Corning Corporation; FOAMULAR Extruded Polystyrene (XPS) Insulation: www.ocbuildingspec.com/#sle.
   d. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 BATT INSULATION MATERIALS

A. Where batt insulation is indicated, either glass fiber or mineral fiber batt insulation may be used, at Contractor's option.

B. Glass Fiber Batt Insulation: Flexible preformed batt or blanket, complying with ASTM C665; friction fit.
   1. Flame Spread Index: 75 or less, when tested in accordance with ASTM E84.
   2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
   3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
   4. Formaldehyde Content: Zero.
   5. Thickness: As indicated on Drawings.
   6. Thermal Resistance: R-value of:
      a. Roof = R-38
      b. Walls = R-20
   7. Manufacturers:
      a. CertainTeed Corporation: www.certainteed.com/#sle.
      b. Johns Manville: www.jm.com/#sle.
      c. Owens Corning Corporation: www.ocbuildingspec.com/#sle.
      d. Substitutions: See Section 01 60 00 - Product Requirements.

C. Mineral Fiber Batt Insulation: Flexible or semi-rigid preformed batt or blanket, complying with ASTM C665; friction fit; unfaced flame spread index of 0 (zero) when tested in accordance with ASTM E84.
   1. Smoke Developed Index: 0 (zero), when tested in accordance with ASTM E84.
   2. Facing: Unfaced.
   3. Thickness: Indicated on Drawings.
   4. Thermal Resistance: R-value of:
      a. Roof = R-38
      b. Walls = R-20
   5. Products:
      a. Johns Manville: www.jm.com/#sle.
      b. CertainTeed Corporation[<>]: www.certainteed.com/#sle.
      c. Owens Corning Corporation[<>]: www.ocbuildingspec.com/#sle.
      d. Knauf Insulation: www.knaufinsulation.com/#sle.
      e. ROCKWOOL (ROXUL, Inc): www.rockwool.com/#sle.
      f. Thermafiber, Inc: www.thermafiber.com/#sle.
      g. Substitutions: See Section 01 60 00 - Product Requirements.

2.04 ACCESSORIES

A. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inch wide.

B. Tape joints of rigid insulation in accordance with roofing and insulation manufacturers' instructions.

C. Nails or Staples: Steel wire; electroplated or galvanized; type and size to suit application.

D. Adhesive: Type recommended by insulation manufacturer for application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT FOUNDATION PERIMETER

A. Adhere a 6 inches wide strip of polyethylene sheet over construction, control, and expansion joints with double beads of adhesive each side of joint.
   1. Tape seal joints.

B. Apply adhesive to back of boards:
   1. Three continuous beads per board length.

C. Install boards horizontally on foundation perimeter.
   1. Place boards to maximize adhesive contact.
   2. Install in running bond pattern.
   3. Butt edges and ends tightly to adjacent boards and to protrusions.

D. Extend boards over expansion joints, unbonded to foundation on one side of joint.

E. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.03 BATT INSTALLATION

A. Install insulation in accordance with manufacturer's instructions.

B. Install in exterior wall spaces without gaps or voids. Do not compress insulation.

C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

E. Staple or nail facing flanges in place at maximum 6 inches on center.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

3.05 PROTECTION

A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

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SECTION 07 31 13
ASPHALT SHINGLES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Asphalt shingle roofing.

B. Flexible sheet membranes for eave protection, underlayment, and valley protection.

C. Ridge Vent.

D. Associated metal flashings and accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Roof sheathing.

B. Section 07 62 00 - Sheet Metal Flashing and Trim: Edge and cap flashings.

C. Section 07 71 23 - Manufactured Gutters and Downspouts.

1.03 REFERENCE STANDARDS

A. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection 2020.

B. ASTM D3462/D3462M - Standard Specification for Asphalt Shingles Made From Glass Felt and Surfaced with Mineral Granules 2019.

C. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free 2007 (Reapproved 2018).

D. ASTM D7158/D7158M - Standard Test Method for Wind Resistance of Asphalt Shingles (Uplift Force/Uplift Resistance Method) 2020.

E. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials 2016.

F. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings 2020a.

G. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples 2021.

H. Miami (APD) - Approved Products Directory; Miami-Dade County Current Edition.

I. UL (DIR) - Online Certifications Directory Current Edition.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating material characteristics.

C. Shop Drawings: For metal flashings, indicate specially configured metal flashings.

D. Samples: Submit two samples of each shingle color indicating color range and finish texture/pattern ; for color selection.

E. Manufacturer's Installation Instructions: Indicate installation criteria and procedures.

F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

G. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Products are Required to Comply with Fire Resistance Criteria: UL (DIR) listed and labeled.

1.06 PREINSTALLATION MEETING

A. Roofing Contractor to conduct a pre-installation meeting at the site prior to commencing work of this section. Require attendance of entities directly concerned with roofing installation.

B. Agenda: Installation procedures; safety procedures; coordination with installation and other work; availability of roofing materials; regulatory requirements; preparation and approval of substrate and penetrations through roof; and other items related to successful execution of work.

C. Maintain one copy of manufacturer's application instructions on the project site.

1.07 FIELD CONDITIONS

A. Do not install shingles or eave protection membrane when surface temperatures are below 45 degrees F.

B. Proceed with work only when existing and forecasted weather conditions will permit work to be performed in accordance with manufacturer's application instructions.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver shingles and other materials to site in manufacturer’s unopened labeled packaging. Promptly verify quantities and conditions. Immediately remove damaged products from site.

B. Store all products in manufacturer's unopened, labeled packaging until they are ready for installation.

C. Store bundles on a flat surface. Maximum stacking height shall not exceed TAMKO’s recommendations. Store all rolls on end.

D. Store and dispose of solvent-based materials in accordance with all applicable federal, state and local regulations.

1.09 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

C. Provide five year manufacturer's warranty for wind damage.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Asphalt Shingles:
   1. Basis of Design: Tamko Elite Glass-Seal fiberglass/Asphalt Shingle; https://www.tamko.com/
   2. Other Acceptable Manufacturers:
      a. Atlas Roofing Corporation: www.atlasroofing.com/#sle.
      b. GAF: www.gaf.com/#sle.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ASPHALT SHINGLES

A. Asphalt Shingles: Asphalt-coated glass felt, mineral granule surfaced, complying with ASTM D3462/D3462M.
   1. Fire Resistance: Class A, complying with ASTM E108.
   2. Wind Resistance (Uplift): Class H, when tested in accordance with ASTM D7158/D7158M.
   3. Warranted Wind Speed: Not greater than 190 mph.
   4. Miami-Dade County approved.
   5. Self-sealing type.
   6. Style: Square.

7. Color: As selected by Architect.

2.03 SHEET MATERIALS

A. Eave Protection Membrane:
   1. Eave Protection Membrane: Self-adhering polymer-modified asphalt sheet complying with ASTM D1970/D1970M; 40 mil total thickness; with strippable treated release paper and polyethylene sheet top surface.

B. Underlayment: Self-adhering rubber-modified asphalt sheet complying with ASTM D1970/D1970M; 22 mil total thickness; with strippable release film and woven polypropylene sheet top surface.
   1. Self Sealability: Passing nail sealability test specified in ASTM D1970/D1970M.
   2. Low Temperature Flexibility: Passing test specified in ASTM D1970/D1970M.
   3. Water Vapor Permeance: 0.067 perm, when tested in accordance with ASTM E96/E96M, Procedure A (desiccant method).

2.04 ACCESSORIES

A. Roofing Nails: Standard round wire shingle type, galvanized steel, stainless steel, aluminum roofing nails, or copper roofing nails, minimum 1 inch head diameter, 12 gauge, 0.109 inch nail shank diameter, 1-1/2 inch long and complying with ASTM F1667. Length must be sufficient to penetrate into solid wood at least 3/4 inch or through roof deck by at least 1/8 inch.

B. Plastic Cement: ASTM D4586/D4586M, asphalt roof cement.

C. Continuous Plastic Ridge Vents: Extruded plastic with vent openings that do not permit direct water or weather entry; flanged to receive shingles. Lightweight, folled, shingle over ridge ventilation. Use in conjunction with eave/soffit ventilation products. Provides 18 sq. inches net free ventilation area per lneal foot.
   1. Basis of Design: Coravent V-600; www.cor-a-vent.com, or equal.

D. Gable Louvers as required to help provide balanced ventilation in accordance with ventilation requirements.

2.05 METAL FLASHINGS

A. Metal Flashings: Provide sheet metal eave edge, gable edge, ridge, ridge vents, open valley flashing, chimney flashing, dormer flashing, and other flashing indicated.
   1. Form flashings to profiles indicated on drawings.
   2. Form sections square and accurate to profile, in maximum possible lengths, free from distortion or defects detrimental to appearance or performance.
   3. Hem exposed edges of flashings minimum 1/4 inch on underside.
   4. Coat concealed surfaces of flashings with bituminous paint.

B. Steel Sheet Metal: Prefinished and galvanized steel sheet, 24 gauge thickness, G90/Z275 hot-dipped galvanized, Kynar coated, color to be selected by Architect from manufacturer's standard K

C. Bituminous Paint: Acid and alkali resistant type; black color.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions prior to beginning work.

B. Verify that roof deck is of sufficient thickness to accept fasteners.

C. Verify that roof penetrations and plumbing stacks are in place and flashed to deck surface.

D. Verify roof openings are correctly framed.

E. Verify deck surfaces are dry, free of ridges, warps, or voids.

F. Proceed with installation only after unsatisfactory conditions have been corrected and roof deck has been properly prepared.

G. If roof deck preparation is the responsibility of another installer, notify the architect or building owner of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Seal roof deck joints wider than 1/16 inch as recommended by shingle manufacturer.

B. At areas where eave protection membrane is to be adhered to substrate, fill knot holes and surface cracks with latex filler.

C. Broom clean deck surfaces before installing underlayment or eave protection.

3.03 INSTALLATION - EAVE PROTECTION MEMBRANE

A. Install eave protection membrane from eave edge to minimum 4 ft up-slope beyond interior face of exterior wall.

B. Install eave protection membrane in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.

3.04 INSTALLATION - UNDERLAYMENT

A. Weather lap and seal watertight with plastic cement any items projecting through or mounted on roof.

B. Install using methods recommended by the manufacturer in accordance with local building codes. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.

C. Eaves:
   1. Install eaves edge metal flashing tight with fascia boards; lap joints 2 inches (51mm) and seal with plastic cement or high quality urethane sealant; nail at the top of the flange.

D. Valleys:
   1. Install eaves membrane at least 36 (914mm) inches wide and centered on the valley. Lap ends 6 inches (152mm) and seal.

E. Hips and Ridges:
   1. Install Underlayment along entire lengths. If ridge vents are to be installed, position the Underlayment so that the ridge slots will not be covered.

F. Roof Deck:
   1. Install one layer of underlayment over the entire area. Install sheets horizontally so water sheds and nail in place.
   2. On roofs sloped at more than 4:12, lap horizontal edges at least 2 inches (51mm) and at least 2 inches (51mm) over eaves membrane.
   3. Lap ends at least 4 inches (102 mm). Stagger end laps of each layer at least 36 inches (914 mm).

G. Synthetic Underlayment Application
   1. Install in accordance with manufacturer’s instructions and local building codes. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
   2. Install over a clean, dry deck.
   3. Install ice and water shield at eaves, rakes, skylights, dormers and other vulnerable leak areas and valleys.
   4. Overlap 3” (76mm) at side laps and 6” (152mm) at end laps.
   5. Follow the nail pattern as marked on the underlayment. Fasten at the fastener locations marked for all applications as solid circles. Fasteners on vertical and horizontal laps must be spaced per manufacturers installation requirements.

6. For high wind applications follow the nail pattern as marked on the underlayment. Fasten at the fastener locations marked for all applications as solid circles and fasten at the additional nail locations that are marked as dotted circles. For high wind application fasteners on vertical and horizontal laps must be spaced (4” (102 mm) o.c. for high wind areas).

H. Penetrations:
1. Vent pipes: Install a 24 inch (610 mm) square piece of eaves membrane lapping over roof deck underlayment; seal tightly to pipe.
2. Vertical walls: Install eaves membrane extending at least 6 inches (152mm) up the wall and 12 inches (305mm) on to the roof surface. Lap the membrane over the roof deck underlayment.
3. Rake Edges: Install metal edge flashing over eaves membrane and roof deck underlayment; set tight to rake boards; lap joints at least 2 inches (51mm) and seal with plastic cement; secure with nails.

3.05 INSTALLATION - METAL FLASHING AND ACCESSORIES

A. Install flashings in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.

B. Weather lap joints minimum 2 inches and seal weather tight with plastic cement.

C. Secure in place with nails at spacing according to manufactur's instructions and conceal fastenings.

D. Items Projecting Through or Mounted on Roofing: Flash and seal weather tight with plastic cement.

3.06 INSTALLATION - SHINGLES

A. Install shingles in accordance with manufacturer's instructions manufacturer's instructions and NRCA (RM) applicable requirements.
1. Fasten individual shingles using two nails per shingle, or as required by manufacturer and local building code, whichever is greater.
2. Fasten strip shingles using four nails per strip, or as required by manufacturer and local building code, whichever is greater.

B. Refer to application instructions for the selected starter strip shingles.

C. Minimize breakage of shingles by avoiding dropping bundles on edge, by separating shingles carefully (not by "breaking" over ridge or bundles), and by taking extra precautions in temperatures below 40 degrees F.

D. Handle carefully in hot weather to avoid scuffing the surfacing, or damaging the shingle edges.

E. Secure with nails per shingle per manufacturer's application instructions or local codes. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.

F. Place shingles in straight coursing pattern with 5 inch weather exposure to produce double thickness over full roof area, and provide double course of shingles at eaves.

G. Project first course of shingles 3/4 inch beyond fascia boards.

H. Extend shingles 1/2 inch beyond face of gable edge fascia boards.

I. Nails must be driven flush with the shingle surface. Do not overdrive or under drive the nails.

J. Shingle offset varies based on the type of shingle specified. consult the application instructions for the specified shingle for details.

K. Extend shingles on one slope across valley and fasten, trim shingles from other slope 2 inches from valley center line to achieve closed cut valley, and concealing valley protection.

L. Complete installation to provide weather tight service.

3.07 INSTALLATION OF ATTIC VENTILATION

A. Ventilation must meet or exceed curent F.H.A., H.U.D. and local code requirements.

B. Ridge Ventilation:
   1. Install ridge vent along the entire length of ridges, according to manufacturer's instructions.
   2. Cut continuous vent slots through the sheathing, stopping 6-inches from each end of the ridge.
   3. On roofs without ridge board, make a slot 1-inch wide, on either side of the peak (2 inch overall).
   4. On roofs with ridge board, make two slots 1-3/4 inches wide, one on each side of the peak (3-1/2 inch overall).
   5. Install ridge vent material along the full length of the ridge, including uncut areas.
   6. Butt ends of ridge vent material and join using roofing cement.
   7. Coordinate ventilation with siding and soffit material specified elsewhere.

C. Gable Louvrs:
   1. Cut vent hole through sheathing as specified by the manufacturer for the type of vent to be installed.
   2. Install a 24 inch square of underlayment, centered around the hole for roof louvers.
   3. Install according to manufacturer's instructions for flashing vent penetrations.
   4. Install eave vents in sufficient quantity to equal or exceed the exhause vent area, calculated as specified by manufacturer.

3.08 PROTECTION

A. Do not permit traffic over finished roof surface.

B. Any roof areas that are not completed by the end of the work day are to be protected from moisture and contamnants.

END OF SECTION

SECTION 07 46 46
FIBER-CEMENT SIDING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fiber-cement siding.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Siding substrate.

1.03 REFERENCE STANDARDS

A. ASTM C1186 - Standard Specification for Flat Fiber Cement Sheets 2008 (Reapproved 2016).

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Submit manufacturer's data sheets on each product to be used, including:
   1. Manufacturer's requirements for related materials to be installed by others.
   2. Preparation instructions and recommendations.
   3. Storage and handling requirements and recommendations.
   4. Installation methods, including nail patterns.

C. Shop Drawings: Indicate dimensions, layout, joints, construction details, support clips, and methods of anchorage.

D. Installer's Qualification Statement.

E. Maintenance Instructions: Periodic inspection recommendations and maintenance procedures.

F. Warranty: Submit copy of manufacturer’s warranty, made out in Owner’s name, showing that it has been registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified in this section with minimum three years of experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store products under waterproof cover and elevated above grade, on a flat surface.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Correct defective work within a five year period after Date of Substantial Completion.

C. Provide multi-year manufacturer warranty as indicated under Siding article sub-heading "Warranty".

PART 2 PRODUCTS

2.01 FIBER-CEMENT SIDING

A. Panel Siding: Vertically oriented panels made of cement and cellulose fiber formed under high pressure with integral surface texture, complying with ASTM C1186, Type A, Grade II; with machined edges, for nail attachment.
   1. Texture: Stucco patterned.
   2. Length (Height): 96 inches, nominal.
   3. Width: 48 inches.
   4. Thickness: 5/16 inch, nominal.
   5. Finish: Factory applied topcoat.
   6. Color: As selected by Architect from manufacturers full range of available colors.

7. Warranty: 50 year limited; transferable.
8. Products:
   a. Basis of Design: Allura, a division of Plycem USA, Inc; Vertical with 8" Groove: www.allurausa.com/#sle.
   b. Substitutions: See Section 01 60 00 - Product Requirements.

B. Soffit Panels: Smooth panels of same material and finish, vented and non-vented - 50/50.

C. Factory Finish: Monochromic topcoat.

2.02 ACCESSORIES

A. Trim: Same material and texture as siding.

B. Metal Trim: Extruded aluminum alloy 6063-T5 temper.
   1. Color: As selected by Architect.

C. Fasteners: Galvanized or corrosion resistant; length as required to penetrate, 1-1/4 inch, minimum.

D. Sealant: Elastomeric, polyurethane or silyl-terminated polyether/polyurethane, and capable of being painted.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrate, clean and repair as required to eliminate conditions that would be detrimental to proper installation.

B. Do not begin until unacceptable conditions have been corrected.

C. If substrate preparation is responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Install Sheet Metal Flashing:
   1. Above door and window trim and casings.
   2. Above horizontal trim in field of siding.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions and recommendations.
   1. Read warranty and comply with terms necessary to maintain warranty coverage.
   2. Use trim details indicated on drawings.
   3. Touch up field cut edges before installing.
   4. Pre-drill nail holes if necessary to prevent breakage.

B. Over Wood and Wood-Composite Sheathing: Fasten siding through sheathing into studs.

C. Joints in Vertical Siding: Install Z-flashing in horizontal joints between successive courses of vertical siding.

D. Do not install siding less than 6 inches from surface of ground nor closer than 1 inch to roofs, patios, porches, and other surfaces where water may collect.

E. After installation, seal joints except lap joints of lap siding; seal around penetrations, and paint exposed cut edges.

END OF SECTION

SECTION 07 92 00
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonsag gunnable joint sealants.

B. Joint backings and accessories.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Additional requirements for sealants and primers.

B. Section 07 84 00 - Firestopping: Firestopping sealants.

C. Section 08 71 00 - Door Hardware: Setting exterior door thresholds in sealant.

D. Section 08 80 00 - Glazing: Glazing sealants and accessories.

E. Section 09 21 16 - Gypsum Board Assemblies: Sealing acoustical and sound-rated walls and ceilings.

F. Section 09 30 00 - Tiling: Sealant between tile and plumbing fixtures and at junctions with other materials and changes in plane.

1.03 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer 2015.

B. ASTM C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants 2018.

C. ASTM C834 - Standard Specification for Latex Sealants 2017.

D. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications 2018.

E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2018.

F. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems 2016.

G. ASTM C1193 - Standard Guide for Use of Joint Sealants 2016.

H. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants 2018.

I. ASTM C1311 - Standard Specification for Solvent Release Sealants 2014.

J. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints 2019 (Reapproved 2020).

K. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials 2020.

L. SCAQMD 1168 - Adhesive and Sealant Applications 1989 (Amended 2017).

M. UL 263 - Standard for Fire Tests of Building Construction and Materials Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
   1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
   2. List of backing materials approved for use with the specific product.

3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
4. Substrates the product should not be used on.
5. Substrates for which use of primer is required.
6. Substrates for which laboratory adhesion and/or compatibility testing is required.
7. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
8. Sample product warranty.
9. Certification by manufacturer indicating that product complies with specification requirements.

C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.

D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

E. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.

F. Sustainable Design Documentation: For sealants and primers, submit VOC content and emissions documentation as specified in Section 01 61 16.

G. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.

H. Installation Plan: Submit at least four weeks prior to start of installation.

I. Preinstallation Field Adhesion Test Plan: Submit at least two weeks prior to start of installation.

J. Field Quality Control Plan: Submit at least two weeks prior to start of installation.

K. Preinstallation Field Adhesion Test Reports: Submit filled out Preinstallation Field Adhesion Test Reports log within 10 days after completion of tests; include bagged test samples and photographic records.

L. Installation Log: Submit filled out log for each length or instance of sealant installed.

M. Field Quality Control Log: Submit filled out log for each length or instance of sealant installed, within 10 days after completion of inspections/tests; include bagged test samples and photographic records, if any.

N. Manufacturer's Qualification Statement.

O. Installer's Qualification Statement.

1.05 QUALITY ASSURANCE

A. Maintain one copy of each referenced document covering installation requirements on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.

D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

E. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
1. Adhesion Testing: In accordance with ASTM C794.
2. Compatibility Testing: In accordance with ASTM C1087.
3. Allow sufficient time for testing to avoid delaying the work.

4. Deliver to manufacturer sufficient samples for testing.
5. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
6. Testing is not required if sealant manufacturer provides data showing previous testing, not older than 24 months, that shows satisfactory adhesion, lack of staining, and compatibility.

F. Installation Plan: Include schedule of sealed joints, including the following.
1. Method to be used to protect adjacent surfaces from sealant droppings and smears, with acknowledgement that some surfaces cannot be cleaned to like-new condition and therefore prevention is imperative.
2. Approximate date of installation, for evaluation of thermal movement influence.
3. Installation Log Form: Include the following data fields, with known information filled out.
   a. Unique identification of each length or instance of sealant installed.
   b. Location on project.
   c. Substrates.
   d. Sealant used.
   e. Stated movement capability of sealant.
   f. Primer to be used, or indicate as "No primer" used.
   g. Size and actual backing material used.
   h. Date of installation.
   i. Name of installer.
   j. Actual joint width; provide space to indicate maximum and minimum width.
   k. Actual joint depth to face of backing material at centerline of joint.
   l. Air temperature.

G. Preinstallation Field Adhesion Test Plan: Include destructive field adhesion testing of one sample of each combination of sealant type and substrate, except interior acrylic latex sealants, and include the following for each tested sample.
1. Identification of testing agency.
2. Name(s) of sealant manufacturers' field representatives who will be observing
3. Preinstallation Field Adhesion Test Log Form: Include the following data fields, with known information filled out.
   a. Test date.
   b. Location on project.
   c. Sealant used.
   d. Date of installation of field sample to be tested.
   e. Date of test.
   f. Copy of test method documents.
   g. Age of sealant upon date of testing.
   h. Test results, modeled after the sample form in the test method document.
   i. Indicate use of photographic record of test.

H. Field Quality Control Plan:
1. Visual inspection of entire length of sealant joints.
2. Field testing agency's qualifications.
3. Field Quality Control Log Form: Show same data fields as on Preinstallation Field Adhesion Test Log, with known information filled out and lines for multiple tests per sealant/substrate combinations; include visual inspection and specified field testing; allow for possibility that more tests than minimum specified may be necessary.

I. Field Adhesion Test Procedures:
1. Allow sealants to fully cure as recommended by manufacturer before testing.
2. Have a copy of the test method document available during tests.

3. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.
4. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Architect.

J. Field Adhesion Tests of Joints: Test for adhesion using most appropriate method in accordance with ASTM C1521, or other applicable method as recommended by manufacturer.

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Correct defective work within a five year period after Date of Substantial Completion.

C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal , exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 JOINT SEALANT APPLICATIONS

A. Scope:
1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
   a. Wall expansion and control joints.
   b. Joints between door, window, and other frames and adjacent construction.
   c. Joints between different exposed materials.
   d. Openings below ledge angles in masonry.
   e. Other joints indicated below.
2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
   a. Joints between door, window, and other frames and adjacent construction.
   b. In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, piping, and other openings; between wall/ceiling and other construction; and other flanking sound paths.
      1) Exception: Such gaps and openings in gypsum board finished stud walls and suspended ceilings.
      2) Exception: Through-penetrations in sound-rated assemblies that are also fire-rated assemblies.
   c. Other joints indicated below.
3. Do not seal the following types of joints.
   a. Intentional weepholes in masonry.
   b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
   c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
   d. Joints where installation of sealant is specified in another section.
   e. Joints between suspended panel ceilings/grid and walls.

B. Exterior Joints: Use non-sag non-staining silicone sealant, unless otherwise indicated.
1. Lap Joints in Sheet Metal Fabrications: Butyl rubber, non-curing.

C. Interior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.
1. Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant.
2. Wall and Ceiling Joints in Wet Areas: Non-sag polyurethane sealant for continuous liquid immersion.

3. Floor Joints in Wet Areas: Non-sag polyurethane "non-traffic-grade" sealant suitable for continuous liquid immersion.
4. Wall, Ceiling, and Floor Joints Where Tamper-Resistance is Required: Non-sag tamper-resistant silyl-terminated polyurethane sealant.
5. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.
6. In Sound-Rated Assemblies: Acrylic emulsion latex sealant.

D. Interior Wet Areas: Bathrooms, restrooms, kitchens, food service areas, and food processing areas; fixtures in wet areas include plumbing fixtures, food service equipment, countertops, cabinets, and other similar items.

E. Sound-Rated Assemblies: Walls and ceilings identified as "STC-rated", "sound-rated", or "acoustical".

F. Areas Where Tamper-Resistance is Required: As indicated on drawings.

2.02 JOINT SEALANTS - GENERAL

A. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

B. Colors: As indicated on drawings.

2.03 NONSAG JOINT SEALANTS

A. Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 50 percent, minimum.
2. Non-Staining To Porous Stone: Non-staining to light-colored natural stone when tested in accordance with ASTM C1248.
3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
4. Color: Match adjacent finished surfaces.
5. Cure Type: Single-component, neutral moisture curing.
6. Service Temperature Range: Minus 20 to 180 degrees F.

B. Type Bathtub/Tile - Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
1. Color: White.

C. Type General Purpose Exterior - Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 35 percent, minimum.
2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
3. Color: Match adjacent finished surfaces.
4. Service Temperature Range: Minus 40 to 180 degrees F.

D. Polyurethane Sealant for Continuous Water Immersion: ASTM C920, Grade NS, Uses M and A; single or multi-component; explicitly approved by manufacturer for continuous water immersion; suitable for traffic exposure when recessed below traffic surface.
1. Movement Capability: Plus and minus 35 percent, minimum.
2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
3. Color: Match adjacent finished surfaces.
4. Service Temperature Range: Minus 40 to 180 degrees F.

E. Type General Purpose Interior Sealant - Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
1. Color: Standard colors matching finished surfaces.
2. Grade: ASTM C834; Grade Minus 18 Degrees C (0 Degrees F).

F. Acrylic Latex Sealant: ASTM C834; for use as acoustical sealant and in firestopping systems for expansion joints and through penetrations.
   1. Color: Standard colors matching finished surfaces.
   2. Fire Rated System: Complies with UL 263 and ASTM E119 with UL fire resistance classifications.

G. Non-Curing Butyl Sealant: Solvent-based, single component, non-sag, non-skinning, non-hardening, non-bleeding; non-vapor-permeable; intended for fully concealed applications.

2.04 ACCESSORIES

A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.

B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

C. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

D. Joint Cleaner: Non-corrosive and non-staining type, type recommended by sealant manufacturer; compatible with joint forming materials.

E. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

D. Preinstallation Adhesion Testing: Install a sample for each test location indicated in the test plan.
   1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.
   2. Notify Architect of date and time that tests will be performed, at least seven days in advance.
   3. Arrange for sealant manufacturer's technical representative to be present during tests.
   4. Record each test on Preinstallation Adhesion Test Log as indicated.
   5. If any sample fails, review products and installation procedures, consult manufacturer, or take whatever other measures are necessary to ensure adhesion; re-test in a different location; if unable to obtain satisfactory adhesion, report to Architect.
   6. After completion of tests, remove remaining sample material and prepare joint for new sealant installation.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in inconspicuous area to verify that it does not stain or discolor slab.

3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Perform acoustical sealant application work in accordance with ASTM C919.

D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

E. Install bond breaker backing tape where backer rod cannot be used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

G. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

H. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

3.04 FIELD QUALITY CONTROL

A. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.

B. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

END OF SECTION

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SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated hollow metal doors and frames.

B. Hollow metal frames for wood doors.

C. Thermally insulated hollow metal doors with frames.

D. Hollow metal borrowed lites glazing frames.

E. Accessories, including glazing, louvers, and matching panels.

1.02 RELATED REQUIREMENTS

A. Section 08 71 00 - Door Hardware.

B. Section 08 80 00 - Glazing: Glass for doors and borrowed lites.

1.03 ABBREVIATIONS AND ACRONYMS

A. ANSI: American National Standards Institute.

B. ASCE: American Society of Civil Engineers.

C. HMMA: Hollow Metal Manufacturers Association.

D. NAAMM: National Association of Architectural Metal Manufacturers.

E. NFPA: National Fire Protection Association.

F. SCIF: Sensitive Compartmented Information Facility.

G. SDI: Steel Door Institute.

H. UL: Underwriters Laboratories.

1.04 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design 2010.

B. ANSI/SDI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames 2007 (Reaffirmed 2011).

C. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors 2011.

D. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100) 2017.

E. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames 2011.

F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.

G. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable 2021.

H. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength 2018a.

I. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete 2020.

J. ASTM C476 - Standard Specification for Grout for Masonry 2020.

K. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames 2016.

L. ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.

M. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames 2002.

N. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames 2011.

O. NAAMM HMMA 840 - Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames 2007.

P. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames 2014.

Q. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames 2013.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.

D. Samples: Submit two samples of metal, 2 by 2 inches in size, showing factory finishes, colors, and surface texture.

E. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.

F. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

G. Manufacturer's Qualification Statement.

H. Installer's Qualification Statement.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

C. Maintain at project site copies of reference standards relating to installation of products specified.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hollow Metal Doors and Frames:
1. Ceco Door, an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. Curries, an Assa Abloy Group company: www.assaabloydss.com/#sle.
3. Republic Doors, an Allegion brand: www.republicdoor.com/#sle.
4. Steelcraft, an Allegion brand: www.allegion.com/#sle.

5. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:
   1. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
   2. Accessibility: Comply with ICC A117.1 and ADA Standards.
   3. Door Top Closures: Flush end closure channel, with top and door faces aligned.
   4. Door Edge Profile: Beveled, both sides.
   5. Typical Door Face Sheets: Flush.
   6. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturers standard.
   7. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 HOLLOW METAL DOORS

A. Door Finish: Factory finished.

B. Exterior Doors: Thermally insulated.
   1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
      a. Level 3 - Extra Heavy-duty.
      b. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
      c. Model 2 - Seamless.
      d. Door Face Metal Thickness: 18 gauge, 0.042 inch, minimum.
   2. Door Core Material: Polyurethane, 1.8 lbs/cu ft minimum density.
   3. Door Thermal Resistance: R-Value of 8.7, minimum, for installed thickness of polyurethane.
   4. Door Thickness: 1-3/4 inches, nominal.
   5. Weatherstripping: Refer to Section 08 71 00.

C. Interior Doors, Non-Fire-Rated:
   1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
      a. Level {CH#47669}.
      b. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
      c. Model 1 - Full Flush.
      d. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
   2. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
   3. Door Thickness: 1-3/4 inches, nominal.

2.04 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Frame Finish: Same as hollow metal door.

C. Exterior Door Frames: Face welded type.
   1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
   2. Weatherstripping: Separate, see Section 08 71 00.

D. Interior Door Frames, Non-Fire Rated: Face welded type.
   1. Terminated Stops: Provide at interior doors; closed end stop terminated 6 inch, maximum, above floor at 45 degree angle.

E. Frames for Wood Doors: Comply with frame requirements in accordance with corresponding door.

F. Borrowed Lites Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings.

2.05 FINISHES

A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

B. Factory Finish: Complying with ANSI/SDI A250.3, manufacturer's standard coating.
   1. Color: As selected by Architect from manufacturer's standard range.

C. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15 mil, 0.015 inch dry film thickness (DFT) per coat; provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.06 ACCESSORIES

A. Glazing: As specified in Section 08 80 00, factory installed.

B. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.

C. Astragals for Double Doors:
   1. Exterior Doors: Steel, Z-shaped.
   2. Fire-Rated Doors: Steel, shape as required for fire rating.

D. Grout for Frames: Mortar grout complying with ASTM C476 with maximum slump of 4 inches as measured in accordance with ASTM C143/C143M for hand troweling in place; plaster grout and thinner pumpable grout are prohibited.

E. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

F. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 PREPARATION

A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.03 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.

B. Install prefinished frames after painting and wall finishes are complete.

C. Coordinate frame anchor placement with wall construction.

D. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.

E. Install door hardware as specified in Section 08 71 00.

F. Comply with glazing installation requirements of Section 08 80 00.

G. Coordinate installation of electrical connections to electrical hardware items.

H. Touch up damaged factory finishes.

3.04 TOLERANCES

A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.

B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.05 ADJUSTING

A. Adjust for smooth and balanced door movement.

END OF SECTION

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SECTION 08 14 16
FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flush wood doors; flush and flush glazed configuration; non-rated.

1.02 RELATED REQUIREMENTS

A. Section 08 12 13 - Hollow Metal Frames.

B. Section 08 71 00 - Door Hardware.

C. Section 08 80 00 - Glazing.

D. Section 09 90 00 - Painting and Coating: Field finishing of doors.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.

C. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.
   1. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).

D. Samples: Submit two samples of door construction, cut from top corner of door

E. Samples: Submit two samples of door veneer, illustrating wood grain, stain color, and sheen.

F. Certificate: Submit labels and certificates required by quality assurance and quality control programs.

G. Manufacturer's Installation Instructions: Indicate special installation instructions.

H. Manufacturer's Qualification Statement.

I. Installer's Qualification Statement.

J. Warranty, executed in Owner's name.

1.05 QUALITY ASSURANCE

A. Maintain one copy of the specified door quality standard on site for review during installation and finishing.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section, with not less than three years of documented experience.
   1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.

C. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than three years of documented experience.

D. Quality Certification:
   1. Provide labels or certificates indicating that installed work will comply with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
   2. Provide designated labels on shop drawings as required by certification program.
   3. Provide designated labels on installed products as required by certification program.
   4. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver and store doors in accordance with specified quality standard.

B. Accept doors on site in manufacturer's packaging, and inspect for damage.

C. Protect doors with resilient packaging sealed with heat shrunk plastic; do not store in damp or wet areas or areas where sunlight might bleach veneer; seal top and bottom edges with tinted sealer if stored more than one week, and break seal on site to permit ventilation.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Interior Doors: Provide manufacturer's warranty for the life of the installation.

C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Wood Veneer Faced Doors:
   1. Haley Brothers: www.haleybros.com/#sle.
   2. Masonite Architectural: www.architectural.masonite.com/#sle.
   3. Oregon Door: www.oregondoor.com/#sle.
   4. VT Industries, Inc: www.vtindustries.com/#sle.
   5. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 DOORS

A. Doors: See drawings for locations and additional requirements.
   1. Quality Standard: Custom Grade, Standard Duty performance, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
   2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.

B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
   1. Provide solid core doors at each location.

2.03 DOOR AND PANEL CORES

A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated.

2.04 DOOR FACINGS

A. Veneer Facing for Transparent Finish: White birch, veneer grade in accordance with quality standard indicated, plain sliced (flat cut), with book match between leaves of veneer, running match of spliced veneer leaves assembled on door or panel face.

2.05 DOOR CONSTRUCTION

A. Fabricate doors in accordance with door quality standard specified.

B. Cores Constructed with stiles and rails:
   1. Provide solid blocks at lock edge for hardware reinforcement.
   2. Provide solid blocking for other throughbolted hardware.

C. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.

D. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

E. Provide edge clearances in accordance with the quality standard specified.

2.06 FINISHES - WOOD VENEER DOORS

A. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
   1. Transparent:
      a. System - 1, Lacquer, Nitrocellulose.
      b. Stain: As selected by Architect.
      c. Sheen: Flat.

B. Factory finish doors in accordance with approved sample.

C. Seal door top edge with color sealer to match door facing.

2.07 ACCESSORIES

A. Hollow Metal Door Frames: See Section 08 11 13.

B. Door Window Frames: Door window frames with glazing securely fastened within door opening.
   1. Size: As indicated on drawings.
   2. Glazing: 1/4 inch thick, tempered glass, in compliance with requirements of authorities having jurisdiction.

C. Glazing: See Section 08 80 00.

D. Glazing Stops: Wood, of same species as door facing, butted corners; prepared for countersink style tamper proof screws.

E. Door Hardware: See Section 08 71 00.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and specified quality standard.
   1. Install fire-rated doors in accordance with NFPA 80 requirements.

B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.

C. Use machine tools to cut or drill for hardware.

D. Coordinate installation of doors with installation of frames and hardware.

E. Coordinate installation of glazing.

3.03 TOLERANCES

A. Comply with specified quality standard for fit and clearance tolerances.

B. Comply with specified quality standard for telegraphing, warp, and squareness.

3.04 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

END OF SECTION

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SECTION 08 31 00
ACCESS DOORS AND PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall mounted access units.

1.02 REFERENCE STANDARDS

A. ITS (DIR) - Directory of Listed Products current edition.

B. UL (FRD) - Fire Resistance Directory Current Edition.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.

C. Shop Drawings: Indicate exact position of each access door and/or panel unit.

D. Manufacturer's Installation Instructions: Indicate installation requirements.

E. Project Record Documents: Record actual locations of each access unit.

PART 2 PRODUCTS

2.01 WALL MOUNTED ACCESS UNITS

A. Manufacturers:
   1. Activar Construction Products Group, Inc. - JL Industries: www.activarcpg.com/#sle.
   2. ACUDOR Products Inc: www.acudor.com/#sle.
   3. Babcock-Davis: www.babcockdavis.com/#sle.
   4. Karp Associates, Inc: www.karpinc.com/#sle.
   5. Milcor, Inc: www.milcorinc.com/#sle.
   6. Substitutions: See Section 01 60 00 - Product Requirements.

B. Wall Mounted Units: Factory fabricated door and frame, fully assembled units with corner joints welded, filled and ground flush; square and without rack or warp; coordinate requirements with type of installation assembly being used for each unit.
   1. Material: Aluminum.
   2. Style: Exposed frame with door surface flush with frame surface.
   3. Door Style: Single thickness with rolled or turned in edges.
   4. Heavy Duty Frames: 14 gauge, 0.0747 inch, minimum thickness.
   5. Aluminum Finish: Natural brushed.
   6. Hardware:
      a. Hinges for Non-Fire-Rated Units: Concealed, constant force closure spring type.
      b. Handle: Fixed.
      c. Latch/Lock: Screw driver slot for quarter turn cam latch.
      d. Number of Locks/Latches Required: As recommended by manufacturer for size of unit.
      e. Inside Latch Release: Mechanism that allows door/panel to be opened from inside.
      f. Gasketing: Extruded neoprene, around perimeter of door panel.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that rough openings are correctly sized and located.

B. Begin installation only after substrates have been properly prepared, and if the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to proceeding with this work.

B. Prepare surfaces using methods recommended by manufacturer for applicable substrates in accordance with project conditions.

3.03 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Install frames plumb and level in openings, and secure units rigidly in place.

C. Position units to provide convenient access to concealed equipment when necessary.

END OF SECTION

SECTION 08 43 13
ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aluminum-framed storefront, with vision glass.

B. Infill panels of glass.

C. Aluminum doors and frames.

D. Weatherstripping.

1.02 RELATED REQUIREMENTS

A. Section 05 12 00 - Structural Steel Framing: Steel attachment members.

B. Section 05 50 00 - Metal Fabrications: Steel attachment devices.

C. Section 07 84 00 - Firestopping: Firestop at system junction with structure.

D. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.

E. Section 08 71 00 - Door Hardware: Hardware items other than specified in this section.

F. Section 08 80 00 - Glazing: Glass and glazing accessories.

1.03 REFERENCE STANDARDS

A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site 2015.

B. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems 2015.

C. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum 2014 (2015 Errata).

D. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections 2009.

E. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.

F. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.

G. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2014.

H. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric) 2014.

I. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2020.

J. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric) 2013.

K. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen 2019.

L. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference 2014.

M. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference 2000 (Reapproved 2016).

N. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic") 2002 (Ed. 2004).

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of other components that comprise the exterior enclosure.

B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, and internal drainage details.

C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.

D. Samples: Submit two samples 12 inches in size illustrating finished aluminum surface, glass, glazing materials.

E. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.

F. Design Data: Provide framing member structural and physical characteristics, engineering calculations, and dimensional limitations.

G. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.

H. Field Quality Control Submittals: Report of field testing for water penetration.

I. Designer's Qualification Statement.

J. Manufacturer's Qualification Statement.

K. Installer's Qualification Statement.

L. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Designer Qualifications: Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.

B. Manufacturer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

C. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Handle products of this section in accordance with AAMA CW-10.

B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.08 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.09 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

C. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.

D. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Aluminum-Framed Storefronts Manufacturers:
1. Kawneer North America: www.kawneer.com/#sle.
2. Oldcastle BuildingEnvelope: www.oldcastlebe.com/#sle.
3. Tubelite, Inc: www.tubeliteinc.com/#sle.
4. YKK AP America Inc: www.ykkap.com.
5. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ALUMINUM-FRAMED STOREFRONT

A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
1. Glazing Position: Centered (front to back).
2. Finish: Class I natural anodized.
   a. Factory finish all surfaces that will be exposed in completed assemblies.
   b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
3. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
4. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
5. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
6. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
7. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
8. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
9. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly, primarily in line with inside pane of glazing and inner sheet of infill panel and heel bead of glazing compound.

B. Performance Requirements
1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
   a. Design Wind Loads: Comply with requirements of ASCE 7.
   b. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.

2. Water Penetration Resistance on Manufactured Assembly: No uncontrolled water on interior face, when tested in accordance with ASTM E331 at pressure differential of 8 psf.
3. Air Leakage: 0.06 cfm/sq ft maximum leakage of storefront wall area when tested in accordance with ASTM E283/E283M at 1.57 psf pressure difference.
4. Condensation Resistance Factor of Framing: 50, minimum, measured in accordance with AAMA 1503.

2.03 COMPONENTS

A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
   1. Framing members for interior applications need not be thermally broken.
   2. Glazing Stops: Flush.
   3. Cross-Section: As indicated on drawings.
   4. Structurally Reinforced Members: Extruded aluminum with internal reinforcement of structural steel member.

B. Glazing: As specified in Section 08 80 00.

C. Swing Doors: Glazed aluminum.
   1. Thickness: 1-3/4 inches.
   2. Top Rail: 4 inches wide.
   3. Vertical Stiles: 4-1/2 inches wide.
   4. Bottom Rail: 6 inches wide.
   5. Glazing Stops: Beveled.
   6. Finish: Same as storefront.

2.04 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M).

B. Sheet Aluminum: ASTM B209 (ASTM B209M).

C. Structural Steel Sections: ASTM A36/A36M; galvanized in accordance with requirements of ASTM A123/A123M.

D. Fasteners: Stainless steel.

E. Exposed Flashings: Aluminum sheet, 20 gauge, 0.032 inch minimum thickness; finish to match framing members.

F. Concealed Flashings: Galvanized steel, 26 gauge, 0.0179 inch minimum base metal thickness.

G. Sealant for Setting Thresholds: Non-curing butyl type.

H. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

I. Glazing Accessories: As specified in Section 08 80 00.

J. Shop and Touch-Up Primer for Steel Components: Zinc oxide, alkyd, linseed oil primer appropriate for use over hand cleaned steel.

K. Touch-Up Primer for Galvanized Steel Surfaces: SSPC-Paint 20, zinc rich.

2.05 FINISHES

A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

B. Color: As selected by Architect from manufacturer's standard range.

C. Touch-Up Materials: As recommended by coating manufacturer for field application.

2.06 HARDWARE

A. For each door, include weatherstripping, sill sweep strip, and threshold.

B. Other Door Hardware: As specified in Section 08 71 00.

C. Weatherstripping: Wool pile, continuous and replaceable; provide on all doors.

D. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all doors.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other work.

B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

3.02 INSTALLATION

A. Install wall system in accordance with manufacturer's instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.

G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.

H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

I. Install glass in accordance with Section 08 80 00, using glazing method required to achieve performance criteria.

J. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.

B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.04 FIELD QUALITY CONTROL

A. Provide services of storefront manufacturer's field representative to observe for proper installation of system and submit report.

B. See Section 01 40 00 - Quality Requirements, for general testing and inspection requirements.

C. Water-Spray Test: Provide water spray quality test of installed storefront components in accordance with AAMA 501.2 during construction process and before installation of interior finishes.

1. Perform a minimum of two tests in each designated area as indicated on drawings.
2. Conduct tests in each area prior to 10 percent and 50 percent completion of this work.

D. Repair or replace storefront components that have failed designated field testing, and retest to verify performance complies with specified requirements.

3.05 ADJUSTING

A. Adjust operating hardware and sash for smooth operation.

3.06 CLEANING

A. Remove protective material from pre-finished aluminum surfaces.

B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, and take care to remove dirt from corners and to wipe surfaces clean.

3.07 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

SECTION 08 71 00
DOOR HARDWARE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Hardware for wood and hollow steel doors.

B. Hardware for fire-rated doors.

C. Thresholds.

D. Weatherstripping, seals and door gaskets.

1.02 RELATED REQUIREMENTS

A. Section 08 1113 - Hollow Metal Doors and Frames.

B. Section 08 1416 - Flush Wood Doors.

1.03 REFERENCE STANDARDS

A. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2003.

B. DHI (LOCS) - Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames; Door and Hardware Institute; 2004.

C. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors; Door and Hardware Institute; 1996.

D. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2010.

E. NFPA 101 - Code for Safety to Life from Fire in Buildings and Structures; National Fire Protection Association; 2009.

1.05 SUBMITTALS

A. See Section 01 3323 - Submittals, for submittal procedures.

B. Shop Drawings:
   1. Indicate locations and mounting heights of each type of hardware, schedules, catalog cuts.
   2. No templates are to be distributed until all Hardware Schedule has been approved by the architect.
   3. Approval of the schedule will not relieve the contractor of the responsibility of furnishing all necessary hardware.
   4. Copies of the approved schedule with necessary templates are to be furnished by the hardware suppliers to other affected subcontractor or material supplier.
   5. Include with each schedule a door index, list of related information to facilitate checking by Architect.

C. Keys: Deliver with identifying tags to Mammoth Spring Senior Center by security shipment direct from hardware supplier.

D. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in City of Jonesboro's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

B. Hardware Supplier Qualifications: Company specializing in supplying commercial door hardware with three years of experience.

C. Hardware Supplier Personnel: Employ an Architectural Hardware Consultant (AHC) or equivalent to assist in the work of this section.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Package hardware items individually; label and identify each package with door opening code to match hardware schedule.

1.08 COORDINATION

A. Coordinate the work with other directly affected sections involving manufacture or fabrication of internal reinforcement for door hardware.

B. Furnish templates for door and frame preparation.

C. Coordinate Mammoth Spring Retirement Facility keying requirements during the course of the Work.

1.09 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Provide five-year warranty for door closers.

PART 2 PRODUCTS

2.01 MANUFACTURERS

H ..... HAGER
N…… NORTON

2.02 GENERAL REQUIREMENTS FOR DOOR HARDWARE PRODUCTS

A. Provide products that comply with the following:
   1. Applicable provisions of Federal, State, and local codes.
   2. ANSI/ICC A117.1, American National Standard for Accessible and Usable Buildings and Facilities.
   3. Applicable provisions of NFPA 101, Life Safety Code.
   4. Fire-Rated Doors: NFPA 80.
   5. All Hardware on Fire-Rated Doors: Listed and classified by UL as suitable for the purpose specified and indicated.
   6. Products Requiring Electrical Connection: Listed and classified by UL as suitable for the purpose specified and indicated.
   7. Hardware other than locks and panics may be approved by architect.

B. Finishes: Identified in schedule at end of section.
   1. US 26D Satin Chrome, all hardware except items listed below.
   2. US 32D Satin Stainless Steel: Wall stops, push, pull and kick plates.
   3. Door Closures: Finish to be 689 aluminum painted.

2.03 KEYING

A. Door Locks:
   1. Keying of specific spaces to be determined by owner.
   2. Key to master System.

B. Supply keys in the following quantities:
   1. 6 master keys.
   2. 3 change keys for each lock.

3. Stamp key bows "Do not duplicate"

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that doors and frames are ready to receive work; labeled, fire-rated doors and frames are present and properly installed, and dimensions are as indicated on shop drawings.

B. Verify that electric power is available to power operated devices and of the correct characteristics.

3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Use templates provided by hardware item manufacturer.

C. Install hardware on fire-rated doors and frames in accordance with code and NFPA 80.

D. Mounting heights for hardware from finished floor to center line of hardware item:
   1. For steel doors and frames: Comply with DHI "Recommended Locations for Architectural Hardware for Steel Doors and Frames."
   2. For steel doors and frames: See Section 08 1113.
   3. For wood doors: Comply with DHI "Recommended Locations for Architectural Hardware for Wood Flush Doors."
   4. Wood doors: See Section 08 1416.

3.03 ADA GUIDELINES

A. All hardware must meet guidelines as stated in the Americans with Disabilities Act. This includes locksets, closers, thresholds, etc.

B. Rough-in for all hardware to be located within handicap reach limitations as outlined in the Americans with Disabilities Act.

C. Note: Door thresholds and closers must meet ADA requirements.

3.04 FIELD QUALITY CONTROL

A. Hardware supplier to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.05 ADJUSTING

A. Adjust hardware for smooth operation.

3.06 PROTECTION

A. Do not permit adjacent work to damage hardware or finish.

3.07 SCHEDULE

HARDWARE SCHEDULE

The following is a general listing of hardware requirements and is not intended to be a final hardware schedule. Any items of hardware required by good practice or to meet state and local codes shall be furnished whether or not specifically called out in the below listed groups.

Abbreviations: Alum = Clear / Mill Aluminum

DW = Door Width
DH = Door Height
DOW = Door Opening Width
DOH = Door Opening Height
TBD = To Be Determined

SET 1		Door(s) E1, E2	
Each To Have:			
Y	2 ea	Key Cylinder (Mortise, rim, ETC)	As required (finish as req'd)

- CYLINDER PROVIDER TO SUPPLY APPROPRIATE CAM FOR DOOR LOCK MECHANISM.
- BALANCE OF HARDWARE BY ALUMINUM DOOR SUPPLIER OR EXISTING

SET 2		Door(s) E3	
Each To Have:			
H	3 ea	Hinges	BB1279 4.5" x 4.5" x NRP x US26D
Y	1 ea	Exit Device	2100 x 689
Y	1 ea	Exit Device Trim	AU546F x US26D
N	1 ea	Door Closer	8501 x 689
H	1 ea	Door bottom	756S x AL
H	1 ea	Weatherstrip	891SV x DW x DH x AL
H	1 ea	Threshold	412S x AL
H	1 ea	Floor Stop	267F x US32D

SET 3		Door(s) 103, 105	
Each To Have:			
H	3 ea	Hinges	BB1279 4.5" x 4.5" x US26D
H	1 ea	Lockset (Privacy Function)	3540 WTN x US26D
H	1 ea	Wall Stop	232W or 236W x US32D
H	3 ea	Silencers	307D

SET 4		Door(s) 102	
Each To Have:			
H	3 ea	Hinges	BB1279 4.5" x 4.5" x US26D
H	1 ea	Lockset (Entrance Function)	3553 WTN x US26D
H	1 ea	Wall Stop	232W or 236W x US32D
H	3 ea	Silencers	307D

SET 5		Door(s) 104, 108	
Each To Have:			
H	3 ea	Hinges	BB1279 4.5" x 4.5" x US26D
H	1 ea	Lockset (Storeroom Function)	3580 WTN x US26D
H	1 ea	Overhead Door Stop	6016-SZ2 – US32D

H	3 ea	Silencers	307D

SET 6		Door(s) 106	
Each To Have:			
H	3 ea	Hinges	BB1279 4.5” x 4.5” x US26D
H	1 ea	Lockset (Entrance Function)	3553 WTN x US26D
H	1 ea	Overhead Door Stop	6016-SZ2 – US32D
H	3 ea	Silencers	307D

Note: Door thresholds and closers must meet ADA requirements.

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SECTION 08 80 00
GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Insulating glass units.

B. Glazing units.

C. Glazing compounds and accessories.

1.02 RELATED REQUIREMENTS

A. Section 08 11 13 - Hollow Metal Doors and Frames: Glazed lites in doors and borrowed lites.

B. Section 08 14 16 - Flush Wood Doors: Glazed lites in doors.

C. Section 08 43 13 - Aluminum-Framed Storefronts: Glazing furnished as part of storefront assembly.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials Current Edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test 2015.

C. ASTM C1036 - Standard Specification for Flat Glass 2021.

D. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass 2018.

E. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass 2019.

F. ASTM C1193 - Standard Guide for Use of Joint Sealants 2016.

G. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass 2021.

H. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings 2016.

I. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation 2010.

J. GANA (SM) - GANA Sealant Manual 2008.

K. NFRC 100 - Procedure for Determining Fenestration Product U-factors 2017.

L. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence 2014, with Errata (2017).

M. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems 2017.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by each of the affected installers.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data on Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify

available colors.

D. Samples: Submit two samples 6 by 6 inch in size of glass units.

E. Samples: Submit 6 inch long bead of glazing sealant, color as selected.

F. Certificate: Certify that products of this section meet or exceed specified requirements.

G. Manufacturer's qualification statement.

H. Installer's qualification statement.

I. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

J. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Insulating Glass Units: One of each glass size and each glass type.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with GANA (GM) for glazing installation methods. Maintain one copy on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience.

1.07 FIELD CONDITIONS

A. Do not install glazing when ambient temperature is less than 40 degrees F.

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Insulating Glass Units: Provide a five (5) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design Products: Specific brand names used in drawings and specifications are used to establish design and quality standards, performance criteria, technical characteristics, or other salient requirements. It is not intended to restrict products that are equal to these characteristics. Products that clearly and demonstrably meet the requirements may also be acceptable.

B. Float Glass Manufacturers:
   1. AGC Glass North America, Inc: www.agcglass.com/#sle.
   2. Cardinal Glass Industries: www.cardinalcorp.com/#sle.
   3. Guardian Glass, LLC: www.guardianglass.com/#sle.
   4. Pilkington North America Inc: www.pilkington.com/na/#sle.
   5. Vitro Architectural Glass (formerly PPG Glass): www.vitroglazings.com/#sle.
   6. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
   1. Design Pressure: Calculated in accordance with ASCE 7.

2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
3. Seismic Loads: Design and size glazing components to withstand seismic loads and sway displacement in accordance with the requirements of ASCE 7
4. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
5. Glass thicknesses listed are minimum.

B. Vapor Retarder and Air Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure vapor retarder and air barrier.
1. In conjunction with vapor retarder and joint sealer materials described in other sections.

C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
3. Solar Optical Properties: Comply with NFRC 300 test method.

2.03 GLASS MATERIALS

A. Float Glass: Provide float glass based glazing unless otherwise indicated.
1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality - Q3.
2. Kind HS - Heat-Strengthened Type: Complies with ASTM C1048.
3. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
4. Thicknesses: As indicated; provide greater thickness as required for exterior glazing wind load design.

B. Laminated Glass: Float glass laminated in accordance with ASTM C1172.
1. Laminated Safety Glass: Complies with ANSI Z97.1 - Class B or 16 CFR 1201 - Category II impact test requirements.
2. Polyvinyl Butyral (PVB) Interlayer: 0.030 inch thick, minimum.
3. Provide this type of glazing in the locations required by code.

2.04 INSULATING GLASS UNITS

A. Manufacturers:
1. Any of the manufacturers specified for float glass.

B. Insulating Glass Units: Types as indicated.
1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
3. Metal Edge Spacers: Aluminum, bent and soldered corners.
4. Spacer Color: Black.
5. Edge Seal:
   a. Dual-Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone sealant as secondary seal applied around perimeter.
   b. Color: Black.
6. Purge interpane space with dry air, hermetically sealed.

C. Insulating Glass Units: Vision glass, double glazed with Low-E coating.
1. Basis of Design: Solar Ban 60 or equal.
2. Applications: Exterior glazing unless otherwise indicated.

3. Space between lites filled with air.
4. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum.
   a. Tint: Clear.
5. Inboard Lite: Annealed float glass, 1/4 inch thick, minimum.
   a. Tint: Clear.
6. Total Thickness: 1 inch.

2.05 GLAZING COMPOUNDS

A. Glazing Putty: Polymer modified latex recommended by manufacturer for outdoor use, knife grade consistency; gray color.

B. Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; non-bleeding, non-staining; ASTM C920 Type S, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 15 to 25; color as selected.

2.06 ACCESSORIES

A. Setting Blocks: Neoprene, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.

B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch long by one half the height of the glazing stop by thickness to suit application, self adhesive on one face.

C. Glazing Tape, Back Bedding Mastic Type: Preformed, butyl-based, 100 percent solids compound with integral resilient spacer rod applicable to application indicated; 5 to 30 cured Shore A durometer hardness; coiled on release paper; black color.
   1. Width: As required for application.
   2. Thickness: As required for application.
   3. Spacer Rod Diameter: As required for application.

D. Glazing Gaskets: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

E. Glazing Clips: Manufacturer's standard type.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.

B. Verify that the minimum required face and edge clearances are being provided.

C. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

D. Verify that sealing between joints of glass framing members has been completed effectively.

E. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL

A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.

B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.

C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.

D. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.

E. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.

F. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, etc.

3.04 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.

B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.

D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.05 INSTALLATION - WET GLAZING METHOD (COMPOUND AND COMPOUND)

A. Application - Interior Glazed: Set glazing infills from the interior of the building.

B. Install glazing resting on setting blocks. Install applied stop and center pane by use of spacer shims at 24 inch centers, kept 1/4 inch below sight line.

C. Locate and secure glazing pane using glazers' clips.

D. Fill gaps between glazing and stops with glazing compound until flush with sight line. Tool surface to straight line.

3.06 FIELD QUALITY CONTROL

A. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.

B. Monitor and report installation procedures and unacceptable conditions.

3.07 CLEANING

A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

B. Remove non-permanent labels immediately after glazing installation is complete.

C. Clean glass and adjacent surfaces after sealants are fully cured.

D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.08 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION

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SECTION 09 05 61
COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
   1. Resilient tile and sheet.
   2. Thin-set ceramic tile and stone tile.
   3. Fluid-Applied Flooring.

B. Removal of existing floor coverings.

C. Preparation of new and existing concrete floor slabs for installation of floor coverings.

D. Testing of concrete floor slabs for moisture and alkalinity (pH).

E. Remediation of concrete floor slabs due to unsatisfactory moisture or alkalinity (pH) conditions.
   1. Contractor shall perform all specified remediation of concrete floor slabs. If such remediation is indicated by testing agency's report and is due to a condition not under Contractor's control or could not have been predicted by examination prior to entering into the contract, a contract modification will be issued.

F. Patching compound.

G. Remedial floor coatings.

1.02 RELATED REQUIREMENTS

A. Section 01 22 00 - Unit Prices: Bid pricing for remediation treatments if required.

B. Section 01 40 00 - Quality Requirements: Additional requirements relating to testing agencies and testing.

C. Section 03 30 00 - Cast-in-Place Concrete: Moisture emission reducing curing and sealing compound for slabs to receive adhered flooring, to prevent moisture content-related flooring failures; to remain in place, not to be removed.

D. Section 03 30 00 - Cast-in-Place Concrete: Limitations on curing requirements for new concrete floor slabs.

1.03 PRICE AND PAYMENT PROCEDURES

A. Unit Prices: See Section 01 22 00 - Unit Prices.

B. Unit Price for Alternate Flooring Adhesive: Do not include the cost of the alternate adhesive in the base bid; state on the bid form the unit price per square foot for using the alternate adhesive, in the event such remediation is required.

C. Unit Price for Remedial Floor Coating or Sheet Membrane: Do not include the cost of the floor coating or underlayment in the base bid; state on the bid form the unit price per square foot for the floor coating or underlayment, installed, in the event such remediation is required.
   1. Base the unit price on the assumption that the floor area to be treated is primarily open, not divided into rooms and corridors.
   2. Base the unit price on a total quantity calculated by assuming that only 50 percent of the flooring will require the alternate adhesive.

1.04 REFERENCE STANDARDS

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens) 2020b.

B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete 2020.

C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring 2021.

D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride 2016a.

E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes 2019a.

F. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings 2011.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.06 SUBMITTALS

A. Visual Observation Report: For existing floor coverings to be removed.

B. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
   1. Moisture and alkalinity (pH) limits and test methods.
   2. Manufacturer's required bond/compatibility test procedure.

C. Testing Agency's Report:
   1. Description of areas tested; include floor plans and photographs if helpful.
   2. Summary of conditions encountered.
   3. Moisture and alkalinity (pH) test reports.
   4. Copies of specified test methods.
   5. Recommendations for remediation of unsatisfactory surfaces.
   6. Product data for recommended remedial coating.
   7. Include certification of accuracy by authorized official of testing agency.
   8. Submit report to Architect.
   9. Submit report not more than two business days after conclusion of testing.

D. Adhesive Bond and Compatibility Test Report.

E. Copy of RFCI (RWP).

1.07 QUALITY ASSURANCE

A. Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by Contractor.

B. Contractor may perform adhesive and bond test with Contractor's own personnel or hire a testing agency.

C. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
   1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.

D. Contractor's Responsibility Relating to Independent Agency Testing:
   1. Provide access for and cooperate with testing agency.
   2. Confirm date of start of testing at least 10 days prior to actual start.
   3. Allow at least 4 business days on site for testing agency activities.
   4. Achieve and maintain specified ambient conditions.

5. Notify Architect when specified ambient conditions have been achieved and when testing will start.

E. Remedial Coating Installer Qualifications: Company specializing in performing work of the type specified in this section, trained by or employed by coating manufacturer, and able to provide at least 3 project references showing at least 3 years' experience installing moisture emission coatings.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, handle, and protect products in accordance with manufacturer's instructions and recommendations.

B. Deliver materials in manufacturer's packaging; include installation instructions.

C. Keep materials from freezing.

1.09 FIELD CONDITIONS

A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.

B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 PRODUCTS

2.01 MATERIALS

A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
   1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
   2. Latex or polyvinyl acetate additions are permitted; gypsum content is prohibited.
   3. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.

B. Alternate Flooring Adhesive: Floor covering manufacturer's recommended product, suitable for the moisture and pH conditions present; low-VOC. In the absence of any recommendation from flooring manufacturer, provide a product recommended by adhesive manufacturer as suitable for substrate and floor covering and for conditions present.

C. Remedial Floor Coating: Single- or multi-layer coating or coating/overlay combination intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
   1. Thickness: As required for application and in accordance with manufacturer's installation instructions.
   2. Use product recommended by testing agency and floor covering manufacturer.

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

A. Follow recommendations of testing agency.

B. Perform following operations in the order indicated:
   1. Existing concrete slabs (on-grade and elevated) with existing floor coverings:
      a. Visual observation of existing floor covering, for adhesion, water damage, alkaline deposits, and other defects.

b. Removal of existing floor covering.
2. Existing concrete slabs with coatings or penetrating sealers/hardeners/dustproofers:
3. Preliminary cleaning.
4. Moisture vapor emission tests; 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.
5. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
6. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
7. Specified remediation, if required.
8. Patching, smoothing, and leveling, as required.
9. Other preparation specified.
10. Adhesive bond and compatibility test.
11. Protection.

C. Remediations:
1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.
2. Excessive Moisture Emission or Relative Humidity: If an adhesive that is resistant to the level of moisture present is available and acceptable to flooring manufacturer, use that adhesive for installation of the flooring; if not, apply remedial floor coating or remedial sheet membrane over entire suspect floor area.
3. Excessive Alkalinity (pH): If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

3.02 REMOVAL OF EXISTING FLOOR COVERINGS

A. Comply with local, State, and federal regulations and recommendations of RFCI Recommended Work Practices for Removal of Resilient Floor Coverings, as applicable to floor covering being removed.

B. Dispose of removed materials in accordance with local, State, and federal regulations and as specified.

3.03 PRELIMINARY CLEANING

A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.

B. Do not use solvents or other chemicals for cleaning.

3.04 MOISTURE VAPOR EMISSION TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F1869 and as follows.

D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test

values exceed 3 pounds per 1000 square feet per 24 hours.

F. Report: Report the information required by the test method.

3.05 INTERNAL RELATIVE HUMIDITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F2170 Procedure A and as follows.

D. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.

F. Report: Report the information required by the test method.

3.06 ALKALINITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. The following procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.
   1. Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.
   2. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds, then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.
   3. Use of a digital pH meter with probe is acceptable; follow meter manufacturer's instructions.

C. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

3.07 PREPARATION

A. See individual floor covering section(s) for additional requirements.

B. Comply with requirements and recommendations of floor covering manufacturer.

C. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.

D. Do not fill expansion joints, isolation joints, or other moving joints.

3.08 ADHESIVE BOND AND COMPATIBILITY TESTING

A. Comply with requirements and recommendations of floor covering manufacturer.

3.09 APPLICATION OF REMEDIAL FLOOR COATING

A. Comply with requirements and recommendations of coating manufacturer.

3.10 PROTECTION

A. Cover prepared floors with building paper or other durable covering.

END OF SECTION

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SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cementitious backing board.

B. Gypsum wallboard.

C. Joint treatment and accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Building framing and sheathing.

B. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.

C. Section 07 21 00 - Thermal Insulation: Acoustic insulation.

D. Section 07 92 00 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.

1.03 REFERENCE STANDARDS

A. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units 2018.

B. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units 1999 (Reaffirmed 2016).

C. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board 2017.

D. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board 2004 (Reapproved 2020).

E. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board 2020.

F. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units 2021.

G. ASTM C1396/C1396M - Standard Specification for Gypsum Board 2017.

H. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber 2016.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate special details associated with acoustic seals.

C. Product Data: Provide data on gypsum board, accessories, and joint finishing system.

D. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

PART 2 PRODUCTS

2.01 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
   1. American Gypsum Company: www.americangypsum.com/#sle.
   2. CertainTeed Corporation: www.certainteed.com/#sle.
   3. Georgia-Pacific Gypsum: www.gpgypsum.com/#sle.
   4. National Gypsum Company: www.nationalgypsum.com/#sle.
   5. USG Corporation: www.usg.com/#sle.
   6. Substitutions: See Section 01 60 00 - Product Requirements.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   2. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
   3. Thickness:
      a. Vertical Surfaces: 5/8 inch.
      b. Ceilings: 5/8 inch.

C. Backing Board For Wet Areas: One of the following products:
   1. Application: Surfaces behind tile in wet areas including tub and shower surrounds, shower ceilings, and as recommended behind epoxy coated walls.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   3. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
      a. Thickness: 1/2 inch.
      b. Products:
         1) Custom Building Products: www.custombuildingproducts.com/#sle.
         2) National Gypsum Company; PermaBase Cement Board: www.nationalgypsum.com/#sle.
         3) USG Corporation: www.usg.com/#sle.
         4) Substitutions: See Section 01 60 00 - Product Requirements.

D. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.
   1. Application: Vertical surfaces behind thinset tile, except in wet areas.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   3. Type X Thickness: 5/8 inch.
   4. Edges: Tapered.
   5. Products:
      a. American Gypsum Company; M-Bloc Type X: www.americangypsum.com/#sle.
      b. Georgia-Pacific Gypsum; DensArmor Plus: www.gpgypsum.com/#sle.
      c. National Gypsum Company; Gold Bond XP Gypsum Board: www.nationalgypsum.com/#sle.
      d. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 GYPSUM WALLBOARD ACCESSORIES

A. Acoustic Insulation: As specified in Section 07 21 00.

B. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.

C. Finishing Accessories: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.
   1. Types: As detailed or required for finished appearance.
   2. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.

D. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
   1. Fiberglass Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
   2. Paper Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.

3. Joint Compound: Drying type, vinyl-based, ready-mixed.
4. Joint Compound: Setting type, field-mixed.

E. Finishing Compound: Surface coat and primer, takes the place of skim coating.

F. High Build Drywall Surfacer: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.

G. Textured Finish Materials: Latex- or Vinyl-based compound; plain.

H. Nails for Attachment to Wood Members: ASTM C514.

I. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.

3.03 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.

C. Fire-Resistance-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

D. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.

E. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.

F. Installation on Wood Framing: For rated assemblies, comply with requirements of listing authority. For nonrated assemblies, install as follows:

3.04 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
1. Not more than 30 feet apart on walls and ceilings over 50 feet long.
2. At exterior soffits, not more than 30 feet apart in both directions.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.05 JOINT TREATMENT

A. Glass Mat Faced Gypsum Board and Exterior Glass Mat Faced Sheathing: Use fiberglass joint tape, embed and finish with setting type joint compound.

B. Paper Faced Gypsum Board: Use paper joint tape, embed with drying type joint compound and finish with drying type joint compound.

C. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:

1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
2. Level 3: Walls to receive textured wall finish.
3. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
4. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.

D. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch.
   2. Taping, filling, and sanding are not required at base layer of double-layer applications.

E. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.

3.06 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

SECTION 09 30 00
TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tile for wall applications.

B. Ceramic accessories.

C. Ceramic trim.

D. Non-ceramic trim.

1.02 RELATED REQUIREMENTS

A. Section 07 92 00 - Joint Sealants: Sealing joints between tile work and adjacent construction and fixtures.

1.03 REFERENCE STANDARDS

A. ANSI A108/A118/A136 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium) 2019.

B. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar 2017.

C. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar 2017.

D. ANSI A108.1c - Specifications for Contractors Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Bed with Dry-Set or Latex-Portland Cement 1999 (Reaffirmed 2016).

E. ANSI A108.2 - American National Standard General Requirements: Materials, Environmental and Workmanship 2019.

F. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile-Setting Epoxy Adhesive 2009 (Revised).

G. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar 1999 (Reaffirmed 2010).

H. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy 1999 (Reaffirmed 2010).

I. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout 1999 (Reaffirmed 2010).

J. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout 1999 (Reaffirmed 2010).

K. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework 2017.

L. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar 1999 (Reaffirmed 2010).

M. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone 2005 (Reaffirmed 2016).

N. ANSI A108.19 - American National Standard Specifications for Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar

2020.

O. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive 2013 (Revised).

P. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar 2012 (Revised).

Q. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation 2010 (Reaffirmed 2016).

R. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units 1999 (Reaffirmed 2016).

S. ASTM C373 - Standard Test Methods for Determination of Water Absorption and Associated Properties by Vacuum Method for Pressed Ceramic Tiles and Glass Tiles and Boil Method for Extruded Ceramic Tiles and Non-tile Fired Ceramic Whiteware Products 2018.

T. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation 2019.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by affected installers.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.

C. Samples: Mount tile and apply grout on two plywood panels, minimum 18 by 18 inches in size illustrating pattern, color variations, and grout joint size variations.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Tile: 10 square feet of each size, color, and surface finish combination.

1.06 QUALITY ASSURANCE

A. Maintain one copy of and ANSI A108/A118/A136 and TCNA (HB) on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.

C. Installer Qualifications:
   1. Company specializing in performing tile installation, with minimum of five years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.08 FIELD CONDITIONS

A. Do not install solvent-based products in an unventilated environment.

B. Maintain ambient and substrate temperature above 50 degrees F and below 100 degrees F during installation and curing of setting materials.

PART 2 PRODUCTS

2.01 TILE

A. Manufacturers:
   1. American Olean Corporation: www.americanolean.com/#sle.
   2. Dal-Tile Corporation: www.daltile.com/#sle.
   3. Emser Tile, LLC: www.emser.com/#sle.
   4. Florida Tile: www.floridatile.com.
   5. StonePeak: www.stonepeakceramics.com.
   6. Summitville Tiles, Inc.: www.summitville.com.
   7. Marrazi USA: www.marazzitile.com
   8. Crossville, Inc.: www.crossvillinc.com
   9. Substitutions: See Section 01 60 00 - Product Requirements.

B. Porcelain Tile, Type for Floors and Walls: ANSI A137.1 standard grade.
   1. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.
   2. Size and Shape: Full range of manufacturer's available colors, Up to 3 colors and textures may be used.
   3. Thickness: 3/8 inch.
   4. Edges: Square.(fully rectified)
   5. Surface Finish: unpolished on floors, choice of unpolished, honed, and/or combination on walls.
   6. Color(s): To be selected by Architect from manufacturer's full range.

2.02 TRIM AND ACCESSORIES

2.03 SETTING MATERIALS

A. Manufacturers:
   1. ARDEX Engineered Cements: www.ardexamericas.com/#sle.
   2. Bostik Inc: www.bostik-us.com/#sle.
   3. Custom Building Products: www.custombuildingproducts.com/#sle.
   4. H.B. Fuller Construction Products, Inc: www.tecspecialty.com/#sle.
   5. LATICRETE International, Inc: www.laticrete.com/#sle.
   6. Merkrete, by Parex USA, Inc: www.merkrete.com/#sle.
   7. Substitutions: See Section 01 60 00 - Product Requirements.

B. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4.
   1. Applications: Use this type of bond coat where indicated, and where no other type of bond coat is indicated, or where large and heavy tile is indicated.
   2. Products:
      a. ARDEX Engineered Cements; ARDEX X 77 MICROTEC: www.ardexamericas.com/#sle.
      b. Custom Building Products; ProLite Premium Rapid Setting Large Format Tile Mortar, with Multi-Surface Bonding Primer: www.custombuildingproducts.com/#sle.
      c. H.B. Fuller Construction Products, Inc; TEC Ultimate Large Tile Mortar: www.tecspecialty.com/#sle.
      d. LATICRETE International, Inc; 257 TITANIUM: www.laticrete.com/#sle.
      e. Merkrete, by Parex USA, Inc; Merkrete 720 Marble Pro: www.merkrete.com/#sle.

2.04 GROUTS

A. Manufacturers:
   1. ARDEX Engineered Cements: www.ardexamericas.com/#sle.
   2. Bostik Inc: www.bostik-us.com/#sle.
   3. Custom Building Products: www.custombuildingproducts.com/#sle.
   4. H.B. Fuller Construction Products, Inc: www.tecspecialty.com/#sle.

5. LATICRETE International, Inc: www.laticrete.com/#sle.
6. Merkrete, by Parex USA, Inc: www.merkrete.com/#sle.

B. High Performance Polymer Modified Grout: ANSI A118.7 polymer modified cement grout.
1. Applications: Use this type of grout where indicated and where no other type of grout is indicated.
2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.
3. Color(s): As selected by Architect from manufacturer's full line.

C. Epoxy Grout: ANSI A118.3 chemical resistant and water-cleanable epoxy grout.
1. Applications: floors and wet walls of group restrooms.
2. Color(s): As selected by Architect from manufacturer's full line.
3. Products:
a. ARDEX Engineered Cements; ARDEX WA: www.ardexamericas.com/#sle.
b. Custom Building Products; CEG-IG 100% Solids Industrial Grade Epoxy Grout: www.custombuildingproducts.com/#sle.
c. H.B. Fuller Construction Products, Inc; TEC AccuColor EFX Epoxy Special Effects Grout: www.tecspecialty.com/#sle.
d. LATICRETE International, Inc; LATICRETE SPECTRALOCK PRO Premium Grout: www.laticrete.com/#sle.
e. Merkrete, by Parex USA, Inc; Merkrete Pro Epoxy: www.merkrete.com/#sle.
f. Stuart Dean Company, Inc; Marcoat GS: www.stuartdean.com/#sle.
g. Substitutions: See Section 01 60 00 - Product Requirements.

D. Stain Resistant Grout Additive: Liquid admixture for sanded and unsanded cement-based grouts; mix with dry grout material in place of water.
1. Applications: floors and wet walls in areas other than group restrooms.

2.05 MAINTENANCE MATERIALS

A. Tile Sealant: Gunnable, silicone, siliconized acrylic, or urethane sealant; moisture and mildew resistant type.
1. Applications: Between tile and plumbing fixtures.
2. Color(s): As selected by Architect from manufacturer's full line.
3. Products:
a. ARDEX Engineered Cements; ARDEX SX: www.ardexamericas.com/#sle.
b. Custom Building Products; Commercial 100% Silicone Caulk: www.custombuildingproducts.com/#sle.
c. LATICRETE International, Inc; LATICRETE LATASIL: www.laticrete.com/#sle.
d. Merkrete, by Parex USA, Inc; Merkrete Colored Caulking: www.merkrete.com/#sle.
e. Rust-Oleum Corporation; Merkrete Colored Caulking: www.rustoleum.com/#sle.
f. Substitutions: See Section 01 60 00 - Product Requirements.

2.06 ACCESSORY MATERIALS

A. Backer Board: Cementitious type complying with ANSI A118.9; high density, glass fiber reinforced, 1/2 inch thick; 2 inch wide coated glass fiber tape for joints and corners.

B. Mesh Tape: 2 inch wide self-adhesive fiberglass mesh tape.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.

C. Verify that subfloor surfaces are dust free and free of substances that could impair bonding of setting materials to subfloor surfaces.

D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Protect surrounding work from damage.

B. Vacuum clean surfaces and damp clean.

C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

D. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.

3.03 INSTALLATION - GENERAL

A. Install tile and thresholds and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.19 , manufacturer's instructions, and TCNA (HB) recommendations.

B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.

C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align wall joints.

D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.

E. Form internal angles square and external angles bullnosed.

F. Install ceramic accessories rigidly in prepared openings.

G. Install thresholds where indicated.

H. Sound tile after setting. Replace hollow sounding units.

I. Keep control and expansion joints free of mortar, grout, and adhesive.

J. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

K. Grout tile joints unless otherwise indicated.

L. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

3.04 INSTALLATION - WALL TILE

A. On exterior walls install in accordance with TCNA (HB) Method W244, thin-set over cementitious backer units, with waterproofing membrane.

B. Over cementitious backer units on studs, install in accordance with TCNA (HB) Method W244, using membrane at toilet rooms.

C. Over gypsum wallboard on wood or metal studs install in accordance with TCNA (HB) Method W243, thin-set with dry-set or latex-Portland cement bond coat, unless otherwise indicated.

D. Over interior concrete and masonry install in accordance with TCNA (HB) Method W202, thin-set with dry-set or latex-Portland cement bond coat.

E. Over metal studs without backer install in accordance with TCNA (HB) Method W241, mortar bed, with membrane where indicated.

3.05 CLEANING

A. Clean tile and grout surfaces.

3.06 PROTECTION

A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

SECTION 09 51 00
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 05 31 00 - Steel Decking: Placement of special anchors or inserts for suspension system.

C. Section 07 21 00 - Thermal Insulation: Acoustical insulation.

D. Section 08 31 00 - Access Doors and Panels: Access panels.

1.03 REFERENCE STANDARDS

A. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures Most Recent Edition Cited by Referring Code or Reference Standard.

B. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings 2017.

C. ASTM E1264 - Standard Classification for Acoustical Ceiling Products 2019.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

B. Do not install acoustical units until after interior wet work is dry.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate grid layout and related dimensioning.

C. Product Data: Provide data on suspension system components and acoustical units.

D. Samples: Submit two samples 6 by 6 inch in size illustrating material and finish of acoustical units.

E. Samples: Submit two samples each, 6 inches long, of suspension system main runner, cross runner, and perimeter molding.

F. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

1.06 FIELD CONDITIONS

A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design Products: Specific brand names used in drawings and specifications are used to establish design and quality standards, performance criteria, technical characteristics, or other salient requirements. It is not intended to restrict products that are equal to these characteristics. Products that clearly and demonstrably meet the requirements may also be acceptable.

B. Acoustic Tiles/Panels:

1. Armstrong World Industries, Inc: www.armstrongceilings.com/#sle.
2. CertainTeed Corporation: www.certainteed.com/#sle.
3. USG Corporation: www.usg.com/ceilings/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

C. Suspension Systems:
1. Same as for acoustical units.

2.02 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Ceiling systems designed to withstand the effects of earthquake motions determined according to ASCE 7 for Seismic Design Category D and complying with the following:
1. Local authorities having jurisdiction.

2.03 ACOUSTICAL UNITS

A. Acoustical Units - General: ASTM E1264, Class A.
1. VOC Content: As specified in Section 01 61 16.

B. Acoustical Panels, Type ACT-1: Painted mineral fiber, with the following characteristics:
1. Basis of Design: School Zone, Fine Fissured, Model 1713, as manufactured by Armstrong. www.armstrong.com.
2. Classification: ASTM E1264 Type III.
a. Form: 2, water felted.
3. Size: 24 by 24 inches.
4. Thickness: 3/4 inch.
5. Light Reflectance: 0.85 percent, determined in accordance with ASTM E1264.
6. NRC: 0.70, determined in accordance with ASTM E1264.
7. Ceiling Attenuation Class (CAC): 35, determined in accordance with ASTM E1264.
8. Panel Edge: Square.
9. Color: White.

C. Acoustical Panels, Type ACT-2: Mineral fiber with scrubbable finish, with the following characteristics:
1. Basis of Design: Kitchen Zone, Model 673, as manufactured by Armstrong. www.armstrong.com.
2. Classification: ASTM E1264 Type IX.
3. Size: 24 by 24 inches.
4. Thickness: 3/4 inch.
5. Composition: Wet felted.
6. Light Reflectance: 0.89 percent, determined in accordance with ASTM E1264.
7. Ceiling Attenuation Class (CAC): 33, determined in accordance with ASTM E1264.
8. Panel Edge: Square.
9. Suspension System: Exposed grid.

2.04 SUSPENSION SYSTEM(S)

A. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.

B. Exposed Suspension System: Hot-dipped galvanized steel grid with aluminum cap.
1. Application(s): Seismic, Category D.
2. Structural Classification: Heavy-duty, when tested in accordance with ASTM C635/C635M.
3. Profile: Tee; 15/16 inch face width.
4. Finish: Baked enamel.
5. Color: White.
6. Products:

a. Prelude XL Heavy Duty 15/16" Exposed Tee System, as manufactured by Armstrong. www.armstrong.com.

2.05 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

B. Hanger Wire: 12 gauge, 0.08 inch galvanized steel wire.

C. Hold-Down Clips: Manufacturer's standard clips to suit application.

D. Seismic Clips: Manufacturer's standard clips for seismic conditions and to suit application.

E. Perimeter Moldings: Same metal and finish as grid.
1. Size: As required for installation conditions and specified Seismic Design Category.
2. Angle Molding: L-shaped, for mounting at same elevation as face of grid.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that layout of hangers will not interfere with other work.

3.02 PREPARATION

A. Install after major above-ceiling work is complete.

B. Coordinate the location of hangers with other work.

C. Provide hanger clips during steel deck erection. Provide additional hangers and inserts as required.

3.03 INSTALLATION - SUSPENSION SYSTEM

A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.

B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

C. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
1. Use longest practical lengths.

D. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

E. Seismic Suspension System, Seismic Design Categories D, E, F: Hang suspension system with grid ends attached to the perimeter molding on two adjacent walls; on opposite walls, maintain a 3/4 inch clearance between grid ends and wall.

F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

G. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

H. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

I. Do not eccentrically load system or induce rotation of runners.

3.04 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Fit border trim neatly against abutting surfaces.

D. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

E. Cutting Acoustical Units:
   1. Make field cut edges of same profile as factory edges.

F. Lay acoustical insulation for a distance of 48 inches either side of acoustical partitions as indicated.

G. Install hold-down clips on each panel to retain panels tight to grid system; comply with fire rating requirements.

3.05 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION

SECTION 09 65 00
RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient tile flooring.

B. Resilient base.

C. Installation accessories.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 09 05 61 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

C. Section 09 05 61 - Common Work Results for Flooring Preparation: Concrete slab moisture and alkalinity testing and remediation procedures.

D. Section 26 05 26 - Grounding and Bonding for Electrical Systems: Grounding and bonding of static control flooring to building grounding system.

1.03 REFERENCE STANDARDS

A. ASTM D6329 - Standard Guide for Developing Methodology for Evaluating the Ability of Indoor Materials to Support Microbial Growth Using Static Environmental Chambers 1998 (Reapproved 2015).

B. ASTM F1700 - Standard Specification for Solid Vinyl Floor Tile 2020.

C. ASTM F1861 - Standard Specification for Resilient Wall Base 2021.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Shop Drawings: Indicate seaming plans and floor patterns.

D. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.

E. Verification Samples: Submit two samples, 6 by 6 inch in size illustrating color and pattern for each resilient flooring product specified.

F. Sustainable Design Submittal: Submit VOC content documentation for flooring and adhesives.

G. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.

H. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of subfloor is acceptable.

I. Manufacturer's Qualification Statement.

J. Installer's Qualification Statement.

K. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum three years documented experience.

B. Installer Qualifications: Company specializing in installing specified flooring with minimum three years documented experience.

C. Testing Agency Qualifications: Independent firm specializing in performing concrete slab moisture testing and inspections of the type specified in this section.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.

B. Store all materials off of the floor in an acclimatized, weather-tight space.

C. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

D. Do not double stack pallets.

1.07 FIELD CONDITIONS

A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design Products: Specific brand names used in drawings and specifications are used to establish design and quality standards, performance criteria, technical characteristics, or other salient requirements. It is not intended to restrict products that are equal to these characteristics. Products that clearly and demonstrably meet the requirements may also be acceptable.

2.02 TILE FLOORING

A. Luxury Vinyl Tile - Type LVT: Solid vinyl with color and pattern throughout thickness.
   1. Minimum Requirements: Comply with ASTM F1700, of Class corresponding to type specified.
   2. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E648 or NFPA 253.
   3. Mold and Microbial Resistance: Highly resistant when tested in accordance with ASTM D6329; certified in accordance with UL 2824.
   4. VOC Content Limits: As specified in Section 01 61 16.
   5. Total Thickness: 0.125 inch.
   6. Color: To be selected by Architect from manufacturer's full range.

2.03 RESILIENT BASE

A. Resilient Base: ASTM F1861, Type TS rubber, vulcanized thermoset; style as scheduled.
   1. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E648 or NFPA 253.
   2. Height: 4 inch.
   3. Thickness: 0.125 inch.
   4. Finish: Satin.
   5. Length: Roll.
   6. Color: To be selected by Architect from manufacturer's full range.

2.04 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.

B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.
   1. VOC Content Limits: As specified in Section 01 61 16.

C. Moldings, Transition and Edge Strips: Same material as flooring.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

C. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
   1. Test in accordance with Section 09 05 61.
   2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.
   3. Follow moisture and alkalinity remediation procedures in Section 09 05 61.

3.02 PREPARATION

A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

B. Remove subfloor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.

C. Prohibit traffic until filler is fully cured.

D. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

3.03 INSTALLATION - GENERAL

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install in accordance with manufacturer's written instructions.

C. Adhesive-Applied Installation:
   1. Spread only enough adhesive to permit installation of materials before initial set.
   2. Place copper grounding strip in conductive adhesive and apply additional adhesive to top side of strip before installing static control flooring. Allow strip to extend beyond flooring in accordance with static control flooring manufacturer's instructions. Refer to Section 26 05 26 for grounding and bonding to building grounding system.
   3. Fit joints and butt seams tightly.
   4. Set flooring in place, press with heavy roller to attain full adhesion.

D. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
   1. Metal Strips: Attach to substrate before installation of flooring using stainless steel screws.

E. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

3.04 INSTALLATION - TILE FLOORING

A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

3.05 INSTALLATION - RESILIENT BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. Install base on solid backing. Bond tightly to wall and floor surfaces.

3.06 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean in accordance with manufacturer's written instructions.

3.07 PROTECTION

A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

SECTION 09 67 00
FLUID-APPLIED FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fluid-applied flooring and base.

B. Divider strips and accessories.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 09 05 61 - Common Work Results for Flooring Preparation: Concrete slab moisture and alkalinity testing and remediation procedures.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns and colors available.

C. Samples: Submit two samples, 4 by 4 inch in size illustrating color and pattern for each floor material for each color specified.

D. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.

E. Manufacturer's Installation Instructions: Indicate special procedures.

F. Applicator's Qualification Statement.

G. Maintenance Data: Include maintenance procedures, recommended maintenance materials, procedures for stain removal, repairing surface, and suggested schedule for cleaning.

H. Manufacturer's Standard Warranty.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.

B. Applicator Qualifications: Company specializing in performing the work of this section.
   1. Minimum five years of documented experience.
   2. Approved by manufacturer.

C. Supervisor Qualifications: Trained by product manufacturer , under direct full time supervision of manufacturer's own foreman.

1.06 MOCK-UP

A. Construct mock-up(s) of fluid applied flooring to serve as basis for evaluation of texture and workmanship.
   1. Number of Mock-Ups to be Prepared: One for each type.
   2. Use same materials and methods for use in the work.
   3. Include zinc divider strip.
   4. Locate where directed.
   5. Minimum Size: 48 inches by 48 inches.

B. Obtain approval of mock-up by Architect before proceeding with work.

C. Approved mock-up may remain as part of the Work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store resin materials in a dry, secure area.

B. Store materials for three days prior to installation in area of installation to achieve temperature stability.

1.08 FIELD CONDITIONS

A. Maintain minimum temperature in storage area of 55 degrees F.

B. Store materials in area of installation for minimum period of 24 hours prior to installation.

C. Maintain ambient temperature required by manufacturer 72 hours prior to, during, and 24 hours after installation of materials.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design Products: To establish standards of manufacturer, operation, performance and appearance, drawings and specifications are based on products of the manufacturer (s) listed herein. Provided compliance with requirements, products of other manufacturers may also be acceptable.

2.02 FLUID-APPLIED FLOORING SYSTEMS

A. Modified Polyamine Epoxy (EP-1) Fluid-Applied Flooring:
   1. 1st Coat
      a. Basis of Design Product: Tnemec Surfacing Epoxy Series 281: www.tnemec.com.
      b. Thickness: 1/8 inch, nominal, when dry.
      c. Modified Polyamine Epoxy.
      d. Used for surfacing, patching, and filling voids.
      e. Color: As selected by Architect.
   2. 2nd Coat
      a. Basis of Design: Tnemec Deco-Tread Series 222: www.tnemec.com.
      b. Colored Quartz-Filled Modified Polyamine Epoxy.
      c. A decorative broadcast or slurry broadcast laminated floor-topping system.
      d. Color to be selected from manufacturer's standard color line.
      e. Installed at 1/8 inch mininum thickness.
   3. Top Coat
      a. Basis of Design: Tnemec Deco-Clear Series 284: www.tnemec.com.
      b. Modified Polyamine Epoxy.
      c. Clear finish.
      d. Skid-resistant finish.

B. Minimum Performance Characteristics:
   1. Cure Time at 75 degrees F.: 24 Hours.

2.03 ACCESSORIES

A. Divider Strips: Zinc, 1/8 inch thick, height to match flooring thickness, with anchoring features color as selected.

B. Control Joint Strips: Match divider strips; 1/16 inch nominal width, 1/8 inch wide neoprene filler strip between side strips, with anchoring features, strip height to suit flooring thickness.

C. Base Caps, and Separator Strips: Match divider strips, with projecting base of 1/8 inch.

D. Cant Strips: Molded of flooring resin material.

E. Subfloor Filler: Type recommended by fluid-applied flooring manufacturer.

F. Primer: Type recommended by fluid-applied flooring manufacturer.

G. Transition to other floors - 1/8" zinc strips to be used to transition to other floor systems such as carpet or sealed concrete.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive flooring.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive flooring.

C. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of materials to subfloor surfaces.

D. Cementitious Subfloor Surfaces: Verify that substrates are ready for fluid-applied flooring installation by testing for moisture and alkalinity (pH).
   1. Obtain instructions if test results are not within limits recommended by fluid-applied flooring manufacturer.

3.02 PREPARATION

A. Perform preparation and cleaning procedures in compliance with flooring system manufacturer's instructions and for substrate conditions involved. Do not proceed with work until unsatisfactory conditions have been corrected.

B. Prepare concrete floors as recommended by the manufacturer.

C. Remove subfloor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with subfloor filler.

D. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Grind irregularities above the surface level. Prohibit traffic until filler is cured.

E. Floor Key: Provide U-shaped key at floor drains, expansion and control joints, and transition to dissimilar flooring materials if neeeded.

F. Vacuum clean substrate.

G. Prime Coat: Apply primer over properly prepared substrate as recommended by manufacturer spreading rate with timing of application coordinated with subsequent application of topping mix to insure optimum adhesion between flooring materials and substrate.

H. Apply primer to surfaces required by flooring manufacturer.

3.03 INSTALLATION - ACCESSORIES

A. Accurately saw cut substrate to install divider strips.

B. Install strips straight and level.

C. Install cant strips at base of walls where flooring is to be extended up wall as base.

D. Install base divider strips to match floor pattern. Install terminating cap strip at top of base; attach securely to wall substrate.

3.04 MATERIALS PREPARATION

A. Carefully mix and prepare materials used in resinous flooring system in compliance with manufacturer's instructions.

3.05 INSTALLATION - FLOORING

A. Apply in accordance with manufacturer's instructions.

B. Apply each coat to minimum thickness indicated.

C. Finish to smooth level surface.

D. Hand-Trowled Application
   1. Apply hand-troweled resinous flooring system in compliance with manufacturer's directions to produce a minimum 1/8 inch thick, dense, uniform, non-slip, monolithic

wearing surface, uninterrupted, except at divider strips and joints indicated or required.

2. Trowel apply base coat mix including quarts aggregates over freshly applied primer in number of coats and at spreading rates required to product minimum thickness indicated. Check thickness at frequent and regular intervals by method recommended by manufacturer. Perform finish troweling as work proceeds. Finished surface to be uniform and free of trowel marks.
3. Provide additional thickness as required to provide positive slope to drains.
4. Texture as approved from submittal sample.

E. Cove Base: Apply floor system to wall surfaces at locations indicated to form base with cove of 3/4 inch radius and a height of 4 inches, unless otherwise indicated. Round all interior and external corners. Provide thinset type divider strips parallel to wall.

F. Sealer: After base coat has cured sufficiently, apply sealer of type required in number of coats and at spreading rates recommended by manufacturer.

G. Joints: Where substrate is interrupted by expansion or control joints, provide joint in epoxy flooring to comply with recommendations of flooring system manufacturer.

3.06 CURING, CLEANING, AND PROTECTION

A. Cure flooring system materials in compliance with manufacturer's directions, taking care to prevent their contamination during stages of application and prior to completion of curing process.

B. Protect epoxy flooring materials from damage and wear during construction operation. Where temporary covering is required for this purpose comply with manufacturer's recommendations for protective materials and the method of their application. Remove temporary covering just prior to cleaning for final inspections.

C. Clean flooring system just prior to final inspections. Use materials and procedures recommended by flooring manufacturer.

3.07 PROTECTION

A. Prohibit traffic on floor finish for 48 hours after installation.

B. Barricade area to protect flooring until fully cured.

END OF SECTION

SECTION 09 90 00
PAINTING AND COATING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Interior painting and coating systems.

C. Exterior painting and coating systems.

D. Scope:
   1. Finish surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
      a. Exterior:
         1) Concrete: Cementitious siding, Flexboard, Transite, non-roof shingles, common brick, stucco, tilt-up concrete, precast, and cast-in-place concrete.
         2) Masonry: Concrete masonry units or concrete brick.
         3) Metal: Aluminum, galvanized.
         4) Metal, Miscellaneous: Iron, ornamental iron, structural iron and steel, and other ferrous metal.
         5) Wood: Siding, trim, shutters, sashes, and hardboard-bare/primed.
         6) Drywall: Gypsum board and exterior drywall.
      b. Interior:
         1) Concrete Masonry Units: Concrete, split face, scored, smooth, high density, low density, and fluted.
         2) Metal: Aluminum and galvanized.
         3) Metal, Galvanized: Ceilings and ductwork.
         4) Metal: Structural steel columns, joists, trusses, beams, miscellaneous and ornamental iron, structural iron, and other ferrous metal.
         5) Wood: Walls, ceilings, doors, and trim.
         6) Drywall: Walls, ceilings, gypsum board, and similar items.
   2. Do not paint or finish the following:
      a. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
      b. Items indicated to receive other finishes.
      c. Items indicated to remain unfinished.
      d. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
      e. Non-metallic roofing and flashing.
      f. Stainless steel, anodized aluminum, bronze, terne, and lead items.
      g. Marble, granite, slate, and other natural stones.
      h. Floors, unless specifically so indicated.
      i. Ceramic and other tiles.
      j. Brick, architectural concrete, cast stone, integrally colored plaster and stucco.
      k. Exterior insulation and finish system (EIFS).
      l. Glass.
      m. Concrete masonry in utility, mechanical, and electrical spaces.
      n. Acoustical materials, unless specifically so indicated.
      o. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 05 50 00 - Metal Fabrications: Shop-primed items.

1.03 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency current edition.

B. SSPC-SP 1 - Solvent Cleaning 2015, with Editorial Revision (2016).

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Product characteristics: Provide a list of required coating materials. Cross-reference each product to paint system, and locations of applications areas. Identify each material by manufacturer's catalog number. Use the same designations indicated on drawings and in schedules.
   2. Surface preparation instructions and recommendations.
   3. Primer requirements and finish specification.
   4. Storage and handling requirements and recommendations.
   5. Application methods.
   6. Clean-up information.

C. Samples: Submit four paper draw down samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified and sheen of topcoat.

D. Certification: By manufacturer that paints and finishes comply with VOC limits specified.

E. Applicator's qualification statement.

F. Maintenance Data: Submit coating maintenance manual including finish schedule showing where each product/color/finish was used, product technical data sheets, safety data sheets (SDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements for additional provisions.
   2. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
   3. Label each container with color in addition to manufacturer's label.

1.05 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 3 years experience and approved by manufacturer.

B. Paint Coordination: Use block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

C. Regulatory Requirements: Comply with applicable codes and regulations of governmental agencies having jurisdiction over airborne emissions and industrial waste disposal. Where those requirements conflict with this specification, comply with the more stringent provisions.
   1. Regulatory changes may affect the formulation, availability or use of specified coatings. Confirm availability of coatings to be used.

1.06 SHEENS AND GLOSSES

A. Paints are available in a wide range of sheens or glosses, as measured by a gloss meter from a 60 and/or 85 degree angle from vertical, as a percentage of the amount of light that is reflected. The following terms are used to describe the gloss of our products. The list below is provided for general guidance; refer to the technical data sheet for the actual gloss/sheen level for each product.
   1. Flat - Less than 5 Percent.
   2. Eggshell - 5 - 20 Percent.

3. Satin - 20 - 35 Percent.
4. Semi-Gloss - 30 - 65 Percent.
5. Gloss - Over 65 Percent.

1.07 MOCK-UPS

A. See Section 01 40 00 - Quality Requirements for general requirements for mock-ups.

B. Provide one accent wall as directed by Architect to demonstrate color and finish.

C. Locate where directed by Architect.

D. Mock-up may remain as part of the work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, product name, product code, color designation, VOC content, batch date, environmental handling, surface preparation, application, and use instructions.

C. Paint Materials: Store at a minimum of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

D. Handling: Maintain a clean, dry storage area to prevent contamination or damage to materials.

E. Disposal:
1. Never pour leftover coating down any sink or drain. Use up material on the job or seal can and store safely for future use.
2. Do not incinerate closed containers.
3. For specific disposal or recycle guidelines, contact the local waste management agency or district. Recycle whenever possible.

1.09 FIELD CONDITIONS

A. Do not apply materials when environmental conditions are outside the ranges required by manufacturer.

B. Follow manufacturer's recommended procedures for producing the best results, including testing substrates, moisture in substrates, and humidity and temperature limitations.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers:
1. Farrell-Calhoun Paint, 221 E. Carolina Avenue, Memphis, TN 38126.
2. Benjamin Moore and Co: 101 Paragon Dr ; Montvale, NJ 07645; Toll Free Tel: 866-708-9181; Email: info@benjaminmoore.com; Web:www.benjaminmoore.com.
3. Sherwin Williams www.sherwin-williams.com/#sle.

2.02 PAINTINGS AND COATINGS

A. Material Quality: Provide manufacturer's best quality material of the coating types specified. Provide paints and coatings capable of being readily and uniformly dispersed to complete homogeneous mixture. Provide paints that exhibit good flow and brushing properties and are capable of drying or curing free of streaks and sags.
1. Provide factory-mixed coatings unless otherwise indicated.
2. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application.
3. Do not reduce, thin, or dilute coatings or add materials to coatings unless specifically indicated in manufacturer's instructions.

B. Volatile Organic Compound (VOC) Content:

1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
   a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
   b. Architectural coatings VOC limits of State in which the project is located.
2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site, or other method acceptable to authorities having jurisdiction.

C. Compatibility: Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

D. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

E. Colors: Provide color samples provided by manufacturer of paint system approved for use. Match approved samples for color, texture and coverage.

2.03 PAINT SYSTEMS - EXTERIOR

A. Concrete: Cementitious siding, Flexboard, Transite, non-roof shingles, common brick, stucco, tilt-up, precast, and poured-in-place cement.
   1. Latex Systems:
      a. Gloss Finish:
         1) 1st Coat: Sherwin-Williams Loxon Concrete and Masonry Primer Sealer LX02W50: www.sherwin-williams.com/#sle.
         2) 2nd and 3rd Coat: Sherwin-Williams A-100 Exterior Exterior Latex Gloss, A8 Series: www.sherwin-williams.com/#sle.
      b. Semi-Gloss Finish:
         1) 1st Coat: Sherwin-Williams Loxon Concrete and Masonry Primer Sealer LX02W50: www.sherwin-williams.com/#sle.
         2) 2nd and 3rd Coat: Sherwin-Williams Pro Industrial Acrylic Semi-Gloss, B66-650 Series: www.sherwin-williams.com/#sle.
      c. Satin Finish:
         1) 1st Coat: Sherwin-Williams Loxon Concrete and Masonry Primer Sealer LX02W50: www.sherwin-williams.com/#sle.
         2) 2nd and 3rd Coat: Sherwin-Williams A-100 Exterior Exterior Latex Satin, A82 Series: www.sherwin-williams.com/#sle.
      d. Flat Finish:
         1) 1st Coat: Sherwin-Williams Loxon Concrete and Masonry Primer Sealer LX02W50: www.sherwin-williams.com/#sle.
         2) 2nd and 3rd Coat: Sherwin-Williams A-100 Exterior Exterior Latex Flat, A6 Series: www.sherwin-williams.com/#sle.

B. Masonry: Concrete masonry units (CMU), cinder or concrete block.
   1. Latex Systems:
      a. Flat Finish: Sherwin Williams:
         1) Prime Coat: SW PrepRite Block Filler, B25W25: www.sherwin-williams.com/#sle.
         2) 2nd and 3rd Coat: SW A-100 Exterior Latex Flat, A6 Series: www.sherwin-williams.com/#sle.
      b. Flat Finish: Farrell-Calhoun
         1) Prime Coat: FC Interior/Exterior Latex Masonry Block Filler 470 or 470A.
         2) 2nd and 3rd Coat: FC 100% Acrylic Exterior Flat Latex 200 Line.
      c. Flat Finish: Benjamin Moore
         1) Prime Coat: Coronado Super Kote 5000 Production Block Filler 958-11 (35 g/L), MPI # 4, X-Green 4, LEED V4, CHPS Certified.

2) 2nd and 3rd Coat: Coronado Cryli Cote 100% Acrylic Flat House & Trim Paint 10 (44 g/L), MPI # 10.

C. Metal: Aluminum, Galvanized.
1. Latex Systems:
a. Semi-Gloss Finish: Sherwin Williams
1) Prime Coat:
2) 2nd and 3rd Coat: Sherwin-Williams Pro Industrial Acrylic Semi-Gloss, B66-650 Series: www.sherwin-williams.com/#sle.
b. Gloss Finish: Farrell Calhoun
1) Prime Coat: Primer, latex, interior/exterior: FC 100% Acrylic All Purpose DTM Primer 5-56.
2) 2nd and 3rd Coat: Latex, exterior, gloss: FC 100% Acrylic Exterior Gloss Enamel 2400 Line
c. Semi-Gloss Finish: Benjamin Moore
1) Prime Coat: Ultra Spec HP Acrylic DTM Semi-Gloss Enamel HP29 (147 g/L), MPI # 141, X-Green 141, 153, X-Green 153, LEED 2009.
2) 2nd and 3rd Coat: Ultra Spec HP Acrylic DTM Semi-Gloss Enamel HP29 (147 g/L), MPI # 141, X-Green 141, 153, X-Green 153, LEED 2009.
2. Alkyd Systems, Water-Based:
a. Semi-Gloss Finish: Sherwin Williams
1) Prime Coat: Sherwin-Williams Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series: www.sherwin-williams.com/#sle.
2) 2nd and 3rd Coat: Sherwin-Williams Pro Industrial Water Based Alkyd Urethane Enamel Semi-Gloss, B53-1150 Series: www.sherwin-williams.com/#sle.
b. Gloss Finish: Farrell Calhoun
1) Prime Coat: Primer, latex, interior/exterior - FC 100% Acrylic All Purpose DTM Primer 5-56.
2) 2nd and 3rd Coat: Alkyd, interior/exterior, gloss - FC Tuff-Boy Industrial Gloss Enamel 800 Line.

D. Metal, Miscellaneous: Iron, ornamental iron, structural iron and steel, ferrous metal.
1. Latex Systems:
a. Semi-Gloss Finish: Sherwin Williams
1) Prime Coat: Sherwin-Williams Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series: www.sherwin-williams.com/#sle.
2) 2nd and 3rd Coat: Sherwin-Williams Pro Industrial Acrylic Semi-Gloss, B66-650 Series: www.sherwin-williams.com/#sle.
b. Semi-Gloss Finish: Farrell Calhoun
1) Prime Coat: Primer, latex, interior/exterior - FC 100% Acrylic All Purpose DTM Primer 5-56.
2) 2nd and 3rd Coat: Latex, exterior, gloss: FC 100% Acrylic Exterior Gloss Enamel 2400 Line.
c. Semi-Gloss Finish: Benjamin Moore
1) Prime Coat: Corotech Acrylic Metal Primer V110 (199 g/L), LEED Credit.
2) 2nd and 3rd Coat: Benjamin Moore Ultra Spec HP D.T.M. Acrylic Semi-Gloss Enamel, HP29 (147 g/L), MPI # 141, X-Green 141, 153, X-Green 153, LEED 2009, LEED V4.

E. Wood: Siding, trim, shutters, sashes, and hardboard-bare/primed.
1. Latex Systems:
a. Semi-Gloss Finish: Sherwin Williams
1) Prime Coat: Sherwin-Williams Latex Wood Primer, B42W8041: www.sherwin-williams.com/#sle.

2) 2nd and 3rd Coat: Sherwin-Williams Pro Industrial Acrylic Semi-Gloss, B66-650 Series: www.sherwin-williams.com/#sle.

b. Gloss Finish: Farrell Calhoun
1) Prime Coat: Primer, latex, interior/exterior - FC 100% Acrylic Latex Undercoater 235.
2) 2nd and 3rd Coat: Latex, exterior, gloss - FC 100% Acrylic Exterior Gloss Enamel 2400 Line.

c. Semi-Gloss Finish: Benjamin Moore
1) 1st Coat: Benjamin Moore Fresh Start High-Hiding All Purpose Primer 046 (44 g/L), MPI # 6, 17, X-Green 17, 39, 50, X-Green 50, 137, X-Green 137, LEED Credit, CHPS Certified.
2) 2nd Coat: Benjamin Moore Ultra Spec HP D.T.M. Acrylic Semi-Gloss Enamel, HP29 (147 g/L), MPI # 141, X-Green 141, 153, X-Green 153, LEED 2009, LEED V4.

F. Drywall: Gypsum board - Exterior Drywall.
1. Latex Systems:
a. Satin Finish: Sherwin Williams
1) Prime Coat: Sherwin-Williams Latex Wood Primer, B42W8041: www.sherwin-williams.com/#sle.
2) 2nd and 3rd Coat: Sherwin-Williams A-100 Exterior Latex Satin, A82 Series: www.sherwin-williams.com/#sle.

b. Satin Finish: Farrell Calhoun
1) Prime Coat: Primer, latex, interior/exterior - FC 100% Acrylic Latex Undercoater 235.
2) 2nd and 3rd Coat: Latex, exterior, satin - FC Durashield 100% Acrylic Exterior Satin Enamel 3200 Line.

c. Satin Finish: Benjamin Moore
1) Prime Coat: Benjamin Moore Fresh Start High-Hiding All Purpose Primer 046 (44 g/L), MPI # 6, 17, X-Green 17, 39, 50, X-Green 50, 137, X-Green 137, LEED Credit, CHPS Certified.
2) 2nd and 3rd Coat: Benjamin Moore ben Exterior Low Luster 542 (45 g/l), MPI # 15.

2.04 PAINT SYSTEMS - INTERIOR

A. Masonry CMU: Concrete, split face, scored, smooth, high density, low density, and fluted.
1. Epoxy Systems, Water-Based:
a. Semi-Gloss Finish - Sherwin Williams:
1) Prime Coat: Sherwin-Williams Loxon Block Surfacer, LX01W200: www.sherwin-williams.com/#sle.
2) 2nd and 3rd Coat: Sherwin-Williams Pro Industrial Pre-Catalyzed Waterbased Epoxy, K46 Series: www.sherwin-williams.com/#sle.

b. Semi-Gloss Finish - Farrell Calhoun
1) Prime Coat: Block filler, latex, interior/exterior - FC Interior/Exterior Latex Masonry Block Filler 470.
2) 2nd and 3rd Coat: Latex, interior, semi-gloss - FC 100% Acrylic Semi-Gloss Latex Enamel 600 Line

c. Eg-Shel/Low Luster Finish - Sherwin Williams:
1) Prime Coat: Sherwin-Williams Loxon Block Surfacer, LX01W200: www.sherwin-williams.com/#sle.
2) 2nd and 3rd Coat: Sherwin-Williams Pro Industrial Pre-Catalyzed Waterbased Epoxy, K45 Series: www.sherwin-williams.com/#sle.

d. Eg-Shel/Low Luster Finish - Farrell Calhoun
1) Prime Coat: Block filler, latex, interior/exterior - FC Interior/Exterior Latex Masonry Block Filler 470.

2) 2nd and 3rd Coat: FC Premium Latex Eggshell Enamel 370 Line.

B. Metal: Aluminum and galvanized.
1. Latex Systems:
a. Semi-Gloss Finish: Sherwin Williams
1) Prime Coat: Sherwin-Williams Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series: www.sherwin-williams.com/#sle.
2) 2nd and 3rd Coat: Sherwin-Williams Pro Industrial Acrylic Semi-Gloss, B66-650 Series: www.sherwin-williams.com/#sle.
b. Semi-Gloss Finish: Farrell Calhoun
1) Prime Coat: Primer, latex, interior/exterior - FC 100% Acrylic All Purpose DTM Primer 5-56.
2) 2nd and 3rd Coat: FC 100% Acrylic Semi-Gloss Latex Enamel 600 Line.
c. Semi-Gloss Finish: Benjamin Moore
1) 1st Coat: Corotech Acrylic Block Filler V114 (43 g/L), LEED 2009.
2) 2nd Coat: Corotech Pre-Catalyzed Waterborne Epoxy Semi-Gloss V341 (71 g/L), LEED 2009.

C. Metal, Galvanized: Ceilings and ductwork.
1. Dryfall Waterborne Topcoats:
a. Flat Finish: Sherwin Williams
1) Prime Coat:
2) 2nd and 3rd Coats: : Sherwin-Williams Pro Industrial Waterborne Acrylic Dryfall, B42-181 Series: www.sherwin-williams.com/#sle.
b. Flat Finish: Farrell Calhoun
1) Prime Coat: Primer, latex, interior/exterior - FC 100% Acrylic All Purpose DTM Primer 5-56.
2) 2nd and 3rd Coats: FC Tuff-Boy Waterborne Flat Dry Fall 999 Line.
c. Flat Finish: Benjamin Moore
1) 1st Coat: Coronado Super Kote 5000 Dry Fall Latex Flat N110 (46 g/L), MPI # 118.
2) 2nd and 3rd Coats: Coronado Super Kote 5000 Dry Fall Latex Flat N110 (46 g/L), MPI # 118.

D. Metal: Structural steel columns, joists, trusses, beams, miscellaneous and ornamental iron, structural iron, and ferrous metal.
1. Latex Systems:
a. Semi-Gloss Finish: Sherwin Williams
1) Prime Coat: Sherwin-Williams Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series: www.sherwin-williams.com/#sle.
2) 2nd and 3rd Coats: Sherwin-Williams Pro Industrial Acrylic Semi-Gloss, B66-650 Series: www.sherwin-williams.com/#sle.
b. Semi-Gloss Finish: Farrell Calhoun
1) Prime Coat: Prime Coat: Primer, latex, interior/exterior - FC 100% Acrylic All Purpose DTM Primer 5-56.
2) 2nd and 3rd Coats: FC 100% Acrylic Semi-Gloss Latex Enamel 600 Line.
c. Semi-Gloss Finish: Benjamin Moore
1) Prime Coat: Corotech Acrylic Metal Primer V110 (199 g/L), LEED Credit.
2) 2nd and 3rd Coats: Corotech Pre-Catalyzed Waterborne Epoxy Semi-Gloss V341 (71 g/L), LEED 2009.
2. Dryfall Waterborne Topcoat:
a. Flat Finish: Sherwin Williams
1) 1st Coat: Sherwin-Williams Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series: www.sherwin-williams.com/#sle.

2) 2nd and 3rd Coats: Sherwin-Williams Pro Industrial Waterborne Acrylic Dryfall, B42-181 Series: www.sherwin-williams.com/#sle.

b. Flat Finish: Farrell Calhoun
1) Prime Coat: Primer, latex, interior/exterior - FC 100% Acrylic All Purpose DTM Primer 5-56.
2) 2nd and 3rd Coats: Dry Fall, latex, interior, flat - FC Tuff-Boy Waterborne Flat Dry Fall 999 Line.

c. Flat Finish: Benjamin Moore
1) Prime Coat: Corotech Acrylic Metal Primer V110 (199 g/L), LEED Credit.
2) 2nd and 3rd Coats: Coronado Super Kote 5000 Dry Fall Latex Flat N110 (46 g/L), MPI # 118.

E. Wood: Walls, ceilings, doors, and trim.
1. Latex Systems:
a. Semi-Gloss Finish: Sherwin Williams
1) Prime Coat: Sherwin-Williams Multi-Purpose Int/Ext. Primer/Sealer, B51-450.
2) 2nd and 3rd Coats: Sherwin-Williams ProClassic Waterborne Acrylic Semi-Gloss, B31 Series: www.sherwin-williams.com/#sle.

b. Semi-Gloss Finish: Farrell Calhoun
1) Prime Coat: FC Waterborne 100% Acrylic Enamel Undercoater 699.
2) 2nd and 3rd Coats: Latex, interior, semi-gloss - FC 100% Acrylic Semi-Gloss Latex Enamel 600 Line.

c. Semi-Gloss Finish: Benjamin Moore
1) Prime Coat: Benjamin Moore Fresh Start Multi-Purpose Primer N023 (44 g/L), MPI # 6, 17, X-Green 17, 39, 137, X-Green 137, LEED Credit, CHPS Certified.
2) 2nd and 3rd Coats: Coronado Rust Scat Waterborne Acrylic Semi-Gloss 90 (134 g/L), MPI # 153, LEED Credit.

2. Alkyd Systems, Water-Based:
a. Semi-Gloss Finish: Sherwin Williams
1) Prime Coat: Sherwin-Williams Multi-Purpose Int/Ext. Primer/Sealer, B51-450.
2) 2nd and 3rd Coats: Sherwin-Williams Pro Industrial Water Based Alkyd Urethane Enamel Semi-Gloss, B53-1150 Series: www.sherwin-williams.com/#sle.

b. Semi-Gloss Finish: Farrell Calhoun
1) Prime Coat: Primer, alkyd, interior - FC Alkyd Enamel Undercoater 599.
2) 2nd and 3rd Coats: Alkyd , interior, semi-gloss - FC Alkyd Semi-Gloss Enamel 500 Line.

c. Semi-Gloss Finish: Benjamin Moore
1) Prime Coat: Benjamin Moore Fresh Start Multi-Purpose Primer N023 (44 g/L), MPI # 6, 17, X-Green 17, 39, 137, X-Green 137, LEED Credit, CHPS Certified.
2) 2nd and 3rd Coats: Benjamin Moore Advance Waterborne Interior Alkyd Semi-Gloss 793 (48g/L), LEED 2009, LEED V4, CHPS Certified.

3. Stain and Varnish System:
a. Satin Finish: Sherwin Williams
1) 1st Coat: Sherwin-Williams Minwax Performance Series Tintable Wood Stain 250 VOC: www.sherwin-williams.com/#sle.
2) 2nd and 3rd Coats: Sherwin-Williams Minwax Waterbased Oil-Modified Polyurethane: www.sherwin-williams.com/#sle.

b. Satin Finish: Farrell Calhoun

1) Stain Coat: Stain, waterborne, interior/exterior - FC Wood Kraft Waterborne Penetrating Wiping Stain 1500.
2) 2nd and 3rd Coats: Waterborne varnish, interior, satin - FC Wood Kraft WB Acrylic Polyurethane Varnish 1192.

c. Satin Finish: Benjamin Moore
1) 1st Coat: Lenmar Waterborne Interior Wiping Stain 1WB.1300 (240 g/L), MPI # 186 LEED Credit.
2) 2nd Coat: Lenmar Waterborne Aqua-Plastic Urethane Satin, 1WB.1427 (335 g/L), MPI # 121, 128.

F. Drywall: Walls, ceilings, gypsum board, and similar items.
1. Latex Systems:
a. Eg-Shel Finish: Sherwin Williams
1) 1st Coat: Sherwin-Williams ProMar 200 Zero VOC Interior Latex Primer, B28W2600: www.sherwin-williams.com/#sle.
2) 2nd and 3rd Coat: Sherwin-Williams ProMar 200 Zero VOC Eg-Shel, B20-2600 Series: www.sherwin-williams.com/#sle.
b. Eg-Shel Finish: - Farrell Calhoun
1) Prime Coat: Primer, latex, interior - FC Perfik-Seal Latex Wall Primer/Sealer 380.
2) 2nd and 3rd Coat: FC Premium Latex Eggshell Enamel 370 Line
c. Eg-Shel Finish: - Benjamin Moore
1) Prime Coat: Benjamin Moore Ultra Spec 500 Interior Latex Primer N534 (0 g/L), MPI # 50, X-Green 50, 149, X-Green 149, LEED 2009, LEED V4, CHPS Certified.
2) 2nd and 3rd Coat: Benjamin Moore Ultra Spec 500 Latex Eggshell N538 (0 g/L), MPI # 52, X-Green 52, 145, X-Green 145, 139, X-Green 139, LEED 2009 LEED V4, CHPS Certified.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Do not begin application of coatings until substrates have been properly prepared and are ready to receive work as instructed by the product manufacturer.

D. Test shop-applied primer for compatibility with subsequent cover materials.

E. Ensure that moisture-retaining substrates to receive coatings have moisture content within tolerances allowed by coating manufacturer, using moisture measurement techniques recommended by coating manufacturer. The maximum moisture content of substrates, when measured with an electronic moisture meter, are as follows:
1. Concrete: 12 %
2. Masonry (Clay and CMU): 12%
3. Wood: 15%
4. Gypsum Board: 12%
5. Plaster: 12%

3.02 PREPARATION

A. Comply with manufacturer’s written instructions and recommendations.

B. Clean surfaces thoroughly and correct defects prior to application.

C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

D. Remove mildew from impervious surfaces by scrubbing with solution of water and bleach. Rinse with clean water and allow surface to dry.

E. Concrete:
   1. Remove release agents, curing compounds, efflorescence, and chalk.
   2. Fill bug holes, air pockets, and other voids with cement patching compound.

F. Masonry: Remove efflorescence and chalk.

G. Gypsum Board: Fill minor defects with filler compound; sand smooth and remove dust prior to painting.

H. Aluminum: Remove surface contamination and oil; wash with solvent according to SSPC-SP 1.

I. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
   2. Prepare surface according to SSPC-SP 2.

J. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Prime bare steel surfaces.
   3. Remove rust, loose mill scale, and other foreign substances using methods recommended by paint manufacturer and blast cleaning according to SSPC-SP 6. Protect from corrosion until coated.

K. Wood: Remove dust, grit, and foreign matter. Scrape, sand, and spot prime knots and pitch streaks. Fill nail holes and imperfections with wood filler and sand smooth.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's written instructions.

C. Apply coatings at spread rate required to achieve manufacturer's recommended dry film thickness.

D. Regardless of number of coats specified, apply additional coats until complete hide is achieved.

3.04 PRIMING

A. Apply primer to all surfaces unless specifically not required by coating manufacturer. Apply in accordance with coating manufacturer's instructions.

B. Primers specified in painting schedules may be omitted on items factory primed or factory finished items if acceptable to top coat manufacturers.

3.05 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

B. Clean surfaces immediately of overspray, splatter, and excess material.

C. After coating has cured, clean and replace finish hardware, fixtures, and fittings previously removed.

3.06 PROTECTION

A. Protect finished coatings from damage until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

SECTION 10 14 00
SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cash allowance for signs.

B. Room and door signs.

C. Building identification signs.

D. Plaque.

1.02 RELATED REQUIREMENTS

A. Section 26 51 00 - Interior Lighting: Exit signs required by code.

1.03 PRICE AND PAYMENT PROCEDURES

A. See Section 01 21 00 - Allowances, for cash allowances affecting this section.

B. Room and door signs are not covered by the allowance.

C. Allowance amount covers purchase and delivery but not installation.

1.04 REFERENCE STANDARDS

A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines current edition.

B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design 2010.

C. ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.

C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
   1. When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.
   2. When content of signs is indicated to be determined later, request such information from Owner through Architect at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
   3. Submit for approval by Owner through Architect prior to fabrication.

D. Samples: Submit two samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.

E. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.

F. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Package signs as required to prevent damage before installation.

B. Package room and door signs in sequential order of installation, labeled by floor or building.

C. Store tape adhesive at normal room temperature.

1.08 FIELD CONDITIONS

A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.

B. Maintain this minimum temperature during and after installation of signs.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Flat Signs:
1. Best Sign Systems, Inc: www.bestsigns.com/#sle.
2. Inpro: www.inprocorp.com/#sle.
3. Mohawk Sign Systems, Inc: www.mohawksign.com/#sle.
4. Seton Identification Products: www.seton.com/aec/#sle.
5. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 SIGNAGE APPLICATIONS

A. Accessibility Compliance: Signs are required to comply with ADA Standards and ICC A117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.

B. Room and Door Signs: Provide a sign for every doorway, whether it has a door or not, not including corridors, lobbies, and similar open areas.
1. Sign Type: Flat signs with engraved panel media as specified.
2. Provide "tactile" signage, with letters raised minimum 1/32 inch and Grade II braille.
3. Character Height: 1 inch, unless otherwise indicated
4. Sign Height: 2 inches, unless otherwise indicated.
5. Office Doors: Identify with room numbers to be determined later, not the numbers indicated on drawings; in addition, provide "window" section for replaceable occupant name.
6. Conference and Meeting Rooms: Identify with room numbers to be determined later, not the numbers indicated on drawings; in addition, provide "window" section with sliding "In Use/Vacant" indicator.
7. Service Rooms: Identify with room names and numbers to be determined later, not those indicated on drawings.
8. Rest Rooms: Identify with pictograms, the names "MEN" and "WOMEN", room numbers to be determined later, and braille.

C. Building Identification Signs:
1. Use individual metal letters.
2. Mount on outside wall in location indicated on drawings.

D. Other Dimensional Letter Signs: Wall-mounted.

2.03 SIGN TYPES

A. Flat Signs: Signage media without frame.
1. Corners: Square.
2. Wall Mounting of One-Sided Signs: Tape adhesive.

B. Color and Font: Unless otherwise indicated:
1. Character Font: Helvetica, Arial, or other sans serif font.
2. Character Case: Upper case only.
3. Background Color: To be selected.
4. Character Color: Contrasting color.

2.04 PLAQUES

A. Metal Plaques:
   1. Metal: Aluminum casting.
   2. Metal Thickness: 1/8 inch, minimum.
   3. Text and Typeface:
      a. Character Font: Helvetica, Arial, or other sans serif font.
   4. Border Style: Single line bevel edge.
   5. Surface Finish: As selected by Architect from manufacturer's full range.
   6. Painted Background Color: Light oxide stain.

2.05 DIMENSIONAL LETTERS

A. Metal Letters:
   1. Metal: Aluminum casting.
   2. Metal Thickness: As indicated on drawings.
   3. Letter Height: As indicated on drawings.
   4. Text and Typeface:
      a. Character Font: Helvetica, Arial, or other sans serif font.
      b. Character Case: Upper case only.
   5. Finish: As selected by Architect from manufacturer's full range.
   6. Mounting: As indicated on drawings.

2.06 ACCESSORIES

A. Concealed Screws: Stainless steel, galvanized steel, chrome plated, or other non-corroding metal.

B. Tape Adhesive: Double sided tape, permanent adhesive.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install neatly, with horizontal edges level.

C. Locate signs and mount at heights indicated on drawings and in accordance with ADA Standards and ICC A117.1.

D. Protect from damage until Date of Substantial Completion; repair or replace damaged items.

END OF SECTION

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SECTION 10 28 00
TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Commercial toilet accessories.

B. Commercial shower and bath accessories.

C. Utility room accessories.

1.02 REFERENCE STANDARDS

A. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service 2015a (Reapproved 2019).

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.

C. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2015.

D. ASTM C1036 - Standard Specification for Flat Glass 2021.

E. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror 2018.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.

C. Samples: Submit two samples of each accessory, illustrating color and finish.

D. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Commercial Toilet, Shower, and Bath Accessories:
   1. American Specialties, Inc: www.americanspecialties.com/#sle.
   2. Bradley Corporation: www.bradleycorp.com/#sle.
   3. Bobrick: www.bobrick.com.
   4. Substitutions: Section 01 60 00 - Product Requirements.

B. Provide products of each category type by single manufacturer.

2.02 MATERIALS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.

B. Keys: Provide two keys for each accessory to Owner; master key lockable accessories.

C. Stainless Steel Sheet: ASTM A666, Type 304.

D. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.

E. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.

F. Mirror Glass: Annealed float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.

G. Adhesive: Two component epoxy type, waterproof.

H. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.

2.03 FINISHES

A. Stainless Steel: Satin finish, unless otherwise noted.

2.04 COMMERCIAL TOILET ACCESSORIES

A. Toilet Paper Dispenser: Double roll, surface mounted, for coreless type rolls.

B. Paper Towel Dispenser: Manual, roll paper type.

C. Soap Dispenser: Liquid soap dispenser, wall-mounted, surface, with stainless steel cover and horizontal stainless steel tank and working parts; push type soap valve, check valve, and window gauge refill indicator, tumbler lock.

D. Mirrors: Stainless steel framed, 1/4 inch thick annealed float glass; ASTM C1036.
   1. Annealed Float Glass: Silvering, protective and physical characteristics in compliance with ASTM C1503.
   2. Size: As indicated on drawings.
   3. Frame: 0.05 inchangle shapes, with mitered and welded and ground corners, and tamperproof hanging system; satin finish.
   4. Backing: Full-mirror sized, minimum 0.03 inch galvanized steel sheet and nonabsorptive filler material.

E. Grab Bars: Stainless steel, textured surface.
   1. Standard Duty Grab Bars:
      a. Push/Pull Point Load: 250 pound-force, minimum.
      b. Dimensions: 1-1/4 inch outside diameter, minimum 0.05 inch wall thickness, exposed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
      c. Finish: Satin.
      d. Length and Configuration: As indicated on drawings.

2.05 UTILITY ROOM ACCESSORIES

A. Combination Utility Shelf/Mop and Broom Holder: 0.05 inch thick stainless steel, Type 304, with 1/2 inch returned edges, 0.06 inch steel wall brackets.
   1. Drying rod: Stainless steel, 1/4 inch diameter.
   2. Hooks: Two, 0.06 inch stainless steel rag hooks at shelf front.
   3. Mop/broom holders: Three spring-loaded rubber cam holders at shelf front.
   4. Length: 36 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify exact location of accessories for installation.

C. Verify that field measurements are as indicated on drawings.

3.02 INSTALLATION

A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.

B. Install plumb and level, securely and rigidly anchored to substrate.

C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.

1. Grab Bars: As indicated on drawings.

3.03 PROTECTION

A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION

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SECTION 10 44 00
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguishers.

B. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.

B. Section 09 91 23 - Interior Painting: Field paint finish.

1.03 REFERENCE STANDARDS

A. NFPA 10 - Standard for Portable Fire Extinguishers 2017, with Errata (2018).

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide extinguisher operational features.

C. Shop Drawings: Indicate locations of cabinets and cabinet physical dimensions.

D. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

1.05 FIELD CONDITIONS

A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fire Extinguishers:
   1. Activar Construction Products Group, Inc. - JL Industries: www.activarcpg.com/#sle.
   2. Ansul, a Tyco Business: www.ansul.com/#sle.
   3. Kidde, a unit of United Technologies Corp: www.kidde.com/#sle.
   4. Nystrom, Inc: www.nystrom.com/#sle.
   5. Oval Brand Fire Products: www.ovalfireproducts.com/#sle.
   6. Potter-Roemer: www.potterroemer.com/#sle.
   7. Pyro-Chem, a Tyco Business: www.pyrochem.com/#sle.
   8. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
   1. Provide extinguishers labeled by UL (DIR) or FM (AG) for purpose specified and as indicated.

B. Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
   1. Class: B:C type.
   2. Size: 10 pound.
   3. Size and classification as scheduled.
   4. Finish: Baked enamel, color as selected.

5. Temperature range: Minus 40 degrees F to 120 degrees F.

2.03 ACCESSORIES

A. Extinguisher Brackets: Formed steel, galvanized and enamel finished.

B. Lettering:{ }“FIRE EXTINGUISHER” decal, or vinyl self-adhering, pre-spaced black lettering in accordance with authorities having jurisdiction (AHJ).

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Secure rigidly in place.

C. Place extinguishers in cabinets.

D. Position cabinet signage at locations where indicated on drawings or as directed by AHJ.

END OF SECTION

SECTION 10 73 13
AWNINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal awnings.

1.02 REFERENCE STANDARDS

A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum 2014 (2015 Errata).

B. ASCE 7-10 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures 2010.

C. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire 2019.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Metal Product Data: Product data sheets, including material descriptions and finishes, and preparation instructions and recommendations.

C. Shop Drawings: Indicate awning profiles, sizes, connection attachments, anchorage, size and type of fasteners, graphic images, patterns, accessories, and locations.

D. Samples, Framing: Submit two samples, 6 inch long of framing members, elbow; prefinished.

E. Selection Samples: Manufacturer's color charts for metal framing and awning panel colors and finishes.

F. Manufacturer's qualification statement.

G. Installer's qualification statement.

H. Executed warranty.

I. Specimen warranty.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.05 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Finish Warranty: Provide 20-year manufacturer warranty against excessive degradation of factory-applied finishes. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Awnings:
   1. Lawrence Fabric and Metal Structures: https://www.lawrencefabric.com/products/fabric-awnings-canopies/.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 AWNINGS - GENERAL

A. Design Criteria: Design and fabricate to resist the following loads without failure, damage, or permanent deflection:

1. Wind: 15 psf positive, 30 psf negative; minimum.
2. Snow: 20 psf; minimum.
3. Live: 20 psf; minimum.
4. Thermal Movement: Plus/minus 1/8 inch, maximum.

B. Awnngs shall be designed to meet the minimum requirements of ASCE 7-10.

C. Configuration: As indicated on drawings.

D. Sizes: As indicated on drawings.

E. Provide a complete system ready for erection at project site.

F. Shop fabricate to the greatest extent possible; disassemble if necessary for shipping.

2.03 METAL AWNINGS

A. Type: Face-mounted.

B. Framework: Aluminum.

C. Covering Materials:
1. Interlocking extruded aluminum decking modules.

2.04 COMPONENTS

A. Aluminum Framing System:
1. Aluminum Outriggers, Fascia, Diagonal Supports, and Mounting Brackets: ASTM B211/B211M, 6061 alloy, T6 temper.
2. Fittings: Elbows, T-shapes, wall brackets; cast aluminum.
3. Exposed Fasteners: Flush countersunk galvanized steel screws or bolts; consistent with design of system.
4. Exposed Aluminum Finish: Class I natural anodized.

2.05 FABRICATION - FRAMING

A. Fit and shop assemble components in largest practical sizes, for delivery to site.

B. Fabricate components with joints tightly fitted and secured.

C. Supply components required for anchorage of framing. Fabricate anchors and related components of same material and finish as framing, except where specifically noted otherwise.

2.06 FINISHES

A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that wall substrate anchors are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply items required to be cast into concrete with setting templates, to appropriate Sections.

3.03 INSTALLATION - FRAMING

A. Install in accordance with manufacturer's instructions.

B. Install components plumb and level, accurately fitted, free from distortion or defects.

3.04 INSTALLATION - METAL COVERING

A. Install in accordance with manufacturer's instructions.

B. Fasten metal covering panels to metal support members, aligned level and plumb.

C. Install fascia panels, trim, and flashing.

D. Separate dissimilar metals using concealed bituminous paint.

E. Touch-up damaged finish coating using material provided by manufacturer to match original coating.

3.05 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Misalignment From True Position: 1/4 inch.

END OF SECTION

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SECTION 12 36 00
COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Countertops for architectural cabinet work and sills.

1.02 RELATED REQUIREMENTS

A. Section 06 41 00 - Architectural Wood Casework.

1.03 REFERENCE STANDARDS

A. ANSI A208.2 - Medium Density Fiberboard (MDF) for Interior Applications 2016.

B. ISFA 2-01 - Classification and Standards for Solid Surfacing Material 2013.

C. NEMA LD 3 - High-Pressure Decorative Laminates 2005.

D. PS 1 - Structural Plywood 2009 (Revised 2019).

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

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. Specimen warranty.

C. Shop Drawings: Complete details of materials and installation ; combine with shop drawings of cabinets and casework specified in other sections.

D. Verification Samples: For each finish product specified, minimum size 6 inches square, representing actual product, color, and patterns.

E. Test Reports: Chemical resistance testing, showing compliance with specified requirements.

F. Installation Instructions: Manufacturer's installation instructions and recommendations.

G. Maintenance Data: Manufacturer's instructions and recommendations for maintenance and repair of countertop surfaces.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: Natural Stone Institute (NSI) Accredited Natural Stone Fabricator; www.naturalstoneinstitute.org/#sle.

B. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.07 FIELD 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.

PART 2 PRODUCTS

2.01 COUNTERTOPS

A. Solid Surfacing Countertops and Window Sills: Solid surfacing sheet or plastic resin casting over continuous substrate.

1. Flat Sheet Thickness: 3/4 inch, minimum or as indicated on drawings.
2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
   a. Finish on Exposed Surfaces: Polished, gloss rating of 55 to 80.
   b. Color and Pattern: As selected by Architect from manufacturer's full line.
3. Back and End Splashes: Same sheet material, square top; minimum 4 inches high.
4. Fabricate in accordance with manufacturer's standard requirements.

2.02 MATERIALS

A. Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade, minimum 5-ply; minimum 3/4 inch thick; join lengths using metal splines.

B. Medium Density Fiberboard for Supporting Substrate: ANSI A208.2.

C. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

D. Joint Sealant: Mildew-resistant silicone sealant, white.

2.03 FABRICATION

A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
   1. Join lengths of tops using best method recommended by manufacturer.
   2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
   3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.

B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
   1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
   2. Height: 4 inches, unless otherwise indicated.

C. Solid Surfacing: Fabricate tops and wall panels up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.

PART 3 EXECUTION

3.01 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.

C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 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.

3.03 INSTALLATION

A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.

B. Seal joint between back/end splashes and vertical surfaces.

3.04 TOLERANCES

A. Variation From Horizontal: 1/8 inch in 10 feet, maximum.

B. Offset From Wall, Countertops: 1/8 inch maximum; 1/16 inch minimum.

C. Field Joints: 1/8 inch wide, maximum.

3.05 CLEANING

A. Clean countertops surfaces thoroughly.

3.06 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

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SECTION 22 01 00
PLUMBING GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 CONDITIONS OF THE CONTRACT

A. The conditions of the Contract (General, Supplementary, and other Conditions) and the General Requirements are hereby made a part of this Section.

B. This Section is a Division 22 Basic Materials and Methods Section and is a part of each Division 22 Section.

C. The contractor shall be responsible for construction coordination of all work described in this section with the work specified in other sections of the specifications and shown on the Drawings. In advance of construction, coordinate and work out any minor problems with other trades to avoid conflicts therewith. However, if other minor problems are encountered, bring these problems to the attention of the Designer, who will make the final decisions as to correction.

D. If substituted equipment is to be used, the Contractor shall revise the floor plans shown on the Drawings, indicating to scale, the equipment to be used. The purpose of these revised scale plans is to identify any problems with substituted equipment, and access and clearance requirements are maintained. These revised scale plans are to be submitted with the substituted equipment submittals.

1.02 WORK INCLUDED

A. This Section consists of General Requirements and Standard Specifications covering certain parts of work under Division 22 and is supplemented by other Division 22 sections covering additional work, requirements, and materials specifically applicable to the work of each section.

1.03 CODE AND REGULATORY AGENCY COMPLIANCE

A. Provide work and materials in full accordance with the latest rules and regulations of the following:

1. Occupational Safety and Health Administration

2. 2006 Arkansas Plumbing Code

3. National Fire Protection Association, 101, Life Safety Code

1.04 QUALITY ASSURANCE

A. Manufacturers: Only firms regularly engaged in manufacturing of the Plumbing services, equipment and specialties of types and sizes required, whose products have been in satisfactory use in similar service shall be used on this project.

B. Installers Qualifications: Only firms with successful installation experience on projects with work similar to that required for this project shall perform work on this project.

1.05 SUBMITTALS

A. Comply with Section 013000, Submittals.

1.06 SITE EXAMINATION

A. Examine site, verify dimensions and locations against Drawings, and inform self of conditions under which work is to be done before submitting proposal. No allowance will be made for extra expense on account of error.

B. Information shown relative to existing services is based upon available records and data but is approximate only. Make minor deviations found necessary to conform with actual locations and conditions without extra cost. Verify location and elevation of utilities prior to commencement of excavation for new piping or its installation.

1.07 PLACEMENT OF EQUIPMENT AND WORK

A. The placement of substituted equipment and specified equipment in the locations shown on the drawings shall be the Contractors responsibility. The Contractor shall verify that all substituted and specified equipment will fit, operate and have clearances and accessibility for maintenance, inspections, and operation within the space shown on the Drawings and/or clearances and accessibility cannot be achieved, he shall bring these problems to the attention of the Designer who will make the final decision as to the method of correction. Corrections to work already completed and in-place shall not constitute an increase in the contract amount.

B. Move equipment and/or work into spaces through openings provided or located in the spaces during construction, as required.

C. Do disassembling and reassembling of equipment or other work necessary to accomplish this requirement without extra cost to the Owner. Do not disassemble or reassemble any equipment in order to locate it in the space.

1.08 MATERIAL LIST AND SUBSTITUTIONS

A. Comply with Supplementary General Conditions.

1.09 MAINTENANCE AND OPERATING INSTRUCTIONS

A. Incorporate complete operating instructions including starting, stopping, and description of emergency manual operation methods for the following:

1. Plumbing Pumps

2. Plumbing systems

3. Water Heating Systems

4. Provide charts and diagrams as required

5. Provide operating manual for any equipment listed in individual sections of the specifications

B. Provide maintenance instructions for each item of individual equipment covering pertinent maintenance data, such as lubricants to be used, frequency of lubrications, inspections required, adjustments, belt and pulley sizes, etc.

C. Provide parts, bulletins containing manufacturer=s bulletins with parts numbers, instructions, etc., for each item of equipment. Strip bulletins so that useless bulk is avoided.

D. Post service telephone numbers and/or addresses in an appropriate place as designated by the Designer.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Mention herein or on Drawings requires that this Contractor provide each item listed of quality noted. All material shall be new, full weight, standard in all respects, and in first-class condition. Provide materials of the same brand of manufacture as allowed in associated specification section throughout for each class of material or equipment where possible. Materials shall be tested within the Continental United States by independent, nationally recognized testing agency and shall be listed in accordance with testing agency requirements.

B. The grade or quality of materials desired is indicated by the trade names or catalog numbers stated herein. The catalog numbers and specification are for bidding purposes

only. Actual equipment submitted and ordered shall be verified to be appropriate for indicated use.

C. Dimension, sizes, and capacities shown are a minimum and shall not be changed without permissions of the Designer.

2.02 MATERIALS FURNISHED

A. Identify all materials and equipment by manufacturer=s name and model number. Remove unidentified materials and equipment from site.

B. Equipment specified by manufacturer=s number shall include all accessories, controls, etc., listed in catalog as standard with equipment. Furnish optional or additional accessories as specified.

C. Equipment or material damaged during transportation, installation, or operation is considered as totally damaged. Replace with new equipment. Variance for this permitted only with written consent of the Designer.

PART 3 - EXECUTION

3.01 DRAWINGS AND COORDINATION

A. General arrangement and location of piping, equipment, etc., are shown on Drawings or herein specified. Careful examine other work that may conflict with this work. Install this work in harmony with other crafts and at proper time to avoid delay of work.

B. In advance of construction, work out minor changes and relocations to suit actual conditions and work of other trades to avoid conflict therewith. Any change in rerouting ductwork, piping and equipment shall not be cause for additional cost.

C. The Sub-Contractor shall verify that the measurement of constructed rooms, spaces and areas are as shown on Drawings. Any measurement deviation and/or discrepancies shall be brought to the attention of the Designer who will make the final decision as to the method of correction. Corrections to work already completed and in place shall be done at the Contractor=s expense.

D. In addition, obtain all necessary information from the other trades regarding centers of partitions, walls, location of plumbing mains, fire sprinkler mains, and electrical conduits, ducts, pipes, etc., in order that pipes equipment, and ductwork may be placed in their correct position.

E. Execute any work or apparatus shown on the Drawings and not mentioned in the specifications, or vice versa, the same as if specifically mentioned by both Omission from Drawings or specifications of any minor details of construction, installation, materials or

essential specialties does not relieve this Contractor from furnishing same in place complete.

F. Furnish and install any incidental work not shown or specified which can reasonably be inferred as part of the work and necessary to provide a complete and workable system.

G. Furnish materials and work at proper time to avoid delay of the work.

3.02 CLOSING IN ON UNINSPECTED WORK

A. Do not allow or cause work installed to be covered up or enclosed before it has been inspected and tested. Should work be enclosed or covered up before it has been inspected and tested, Contractor shall uncover work at own expense. After it has been inspected and tested, make repairs necessary to restore work of other Contractors to condition in which it was found at time of cutting.

B. Two (2) sets of Drawings showing all revisions shall be immediately presented to Designer for his records. Maintain additional copies on the project as necessary to comply with@RECORD DRAWINGS@ requirement of the General Requirements.

C. Incorporate all revisions into record Drawings. These drawings shall be up to date at the end of every week and shall be available to Designer at any time for inspection.

3.03 GUARANTEE

A. Be responsible for work done and material installed under these plans and specifications. Repair or replace, as may be necessary, any defective work, material, or part which may show itself within one (1) year of filing of Notice of Completion and be responsible for damage to other materials, furnishing, equipment, or premises caused by such defects during this period, if in the opinion of the Designer said defect is due to imperfection of material or workmanship. Provide all such work and materials at no cost to Owner.

B. Be responsible for damage to any part of premises during guarantee period caused by leaks or breaks in work furnished and/or installed under this Section.

C. Replace refrigerant, lubricants, or gases lost as a result of defects, breaks, or leaks in work.

3.04 RECORD DRAWINGS

A. In addition, furnish one (1) tracing showing all outside utility connections, piping, etc., installed under this contract. Locate and dimension all work with reference to permanent landmarks.

B. Match all symbols and designations used in contract Drawings when preparing Record Drawings.

C. Indicate clearly and correctly all work installed differently from that shown, and maintain records up to date as work progresses. Include invert elevations of pipes below grade of floor, the floor lines, plugged wyes, tees, caps, exact locations and sizing or piping, location of valves, and the like. Dimension locations from structural points.

D. Properly identify all stubs for future connections as to locations and use by setting of concrete marker at finished grade in manner suitable to Designer.

3.05 MAINTENANCE DATA

A. Submit maintenance data and parts lists for all plumbing systems materials and products. Include product data, shop drawings, and Record Drawings in the maintenance manual all in allowance with the requirements of Division 1.

3.06 CLEANING UP

A. Comply with Supplementary General Conditions.

END OF SECTION 22 01 00 Plumbing General Requirements

SECTION 22 02 00

PLUMBING PIPING

PART 1 -GENERAL

1.01 SECTION INCLUDES:

A. Pipe and pipe fittings.

B. Valves.

C. Sanitary sewer piping system.

D. Domestic water piping system.

1.02 RELATED SECTIONS:

A. Section 22 05 29 - Supports and Anchors.

B. Section 22 05 53 - Mechanical Identification.

C. Section 22 07 00 - Piping Insulation.

1.03 REFERENCES:

A. ANSI B31.1 -Power Piping.

B. ASME B16.18 -Cast Bronze Solder-Joint Pressure Fittings.

C. ASME B16.22 -Wrought Copper and Bronze Solder-Joint Pressure Fittings.

D. ASTM A53 -Pipe, Steel, Black and Hot-Dipped Zinc Coated, Welded and Seamless.

E. ASTM A74 -Cast Iron Soil Pipe and Fittings.

F. ASTM A120 -Pipe, Steel, Black and Hot-Dipped Zinc Coated (Galvanized), Welded and Seamless, for Ordinary Uses.

G. ASTM A234 -Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures.

H. ASTM B42 -Seamless Copper Pipe.

I. ASTM B75 -Seamless Copper Tube.

J. ASTM B88 -Seamless Copper Water Tube.

K. ASTM C564 -Rubber Gaskets for Cast Iron Soil Pipe.

L. AWWA C110 -Ductile-Iron and Gray-Iron Fittings 3 in. Through 48 in., for Water and Other Liquids.

M. AWWA C111 -Rubber-Gasket Joints for Ductile Iron and Gray-Iron Pressure Pipe and Fittings.

N. AWWA C651 -Disinfecting Water Mains.

O. CISPI 310 -Joints for Hubless Cast Iron Sanitary Systems.

1.04 QUALITY ASSURANCE:

A. Valves: Manufacturer's name and pressure rating marked on valve body.

B. Welding Materials and Procedures: Conform to ASME Code.

C. Welders Certification: In accordance with ASME Section VIII.

1.05 REGULATORY REQUIREMENTS:

A. Perform Work in accordance with applicable plumbing code.

B. Conform to applicable code for installation of backflow prevention devices.

C. Provide certificate of compliance from authority having jurisdiction.

1.06 DELIVERY, STORAGE AND HANDLING:

A. Deliver, store, protect and handle products to site under provisions of Section 22 01 00.

B. Accept valves on site in shipping containers with labeling in place.

C. Provide temporary protective coating on cast iron and steel valves.

D. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

E. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.07 ENVIRONMENTAL REQUIREMENTS:

A. Do not install underground piping when bedding is wet or frozen.

1.08 EXTRA MATERIALS:

A. Furnish under provisions of Section 23 02 00.

B. Provide two re packing kits for each size valve.

PART 2 -PRODUCTS

2.01 SANITARY SEWER PIPING, BURIED BEYOND 5 FEET OF BUILDING:

Not Used

2.02 SANITARY SEWER PIPING, BURIED WITHIN 5 FEET OF BUILDING:

A. Cast Iron Pipe: ASTM A74 service weight.

1. Fittings: Cast Iron.
2. Joints: Hub-and-spigot, CISPI HSN compression type with ASTM C564 neoprene gaskets or no-hub.

B. Schedule 40, PVC Pipe. ASTM D2665.

1. Fittings: PVC.
2. Joints: D2855, solvent weld with ASTM D2564 solvent cement.

2.03 SANITARY SEWER PIPING ROOF DRAINAGE, ABOVE GROUND:

Not Used

2.04 WATER PIPING, ABOVE GROUND:

A. Copper Tubing: ASTM B88, Type L, hard drawn.

1. Fittings: ASME B16.18, cast bronze, or ASME B16.22, wrought copper and bronze.
2. Joints: ASTM B32, solder, Grade 96TA.

2.06 FLANGES, UNIONS, AND COUPLINGS:

A. Pipe Size 2 inches and Under:

1. Ferrous Pipe: 150 psig malleable iron threaded unions.
2. Copper Tube and Pipe: 150 psig bronze unions with soldered joints.

B. Pipe Size over 2 inches:

1. Ferrous Pipe: 150 psig forged steel slip-on flanges; 1/16 inch thick preformed neoprene gaskets.
2. Copper Tube and Pipe: 150 psig slip-on bronze flanges; 1/16 inch thick preformed neoprene gaskets.

C. Grooved and Shouldered Pipe End Couplings:

1. Housing: Malleable iron clamps to engage and lock, designed to permit some angular deflection, contraction, and expansion; steel bolts, nuts, and washers; galvanized for galvanized pipe.
2. Sealing Gasket: “C” shape composition sealing gasket.

D. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.10 GATE VALVES:

A. Manufacturers:

i) Milwaukee Valve Company

ii) Hammond Valve Corporation

iii) NIBCO Inc.

B. Up to and including 2 inches: Bronze body, bronze trim, non-rising stem, handwheel, inside screw, single wedge or disc, threaded ends.

C. Over 2 inches: Iron body, bronze trim, rising stem, handwheel, OS&Y, single wedge, flanged ends.

2.11 BALL VALVES:

A. Manufacturers:

i) Milwaukee Valve Company

ii) Hammond Valve Corporation

iii) NIBCO Inc.

B. Up to and including 2 inches: Bronze two piece body, stainless steel ball, Teflon seats and stuffing box ring, lever handle, threaded ends with union.

PART 3 EXECUTION

3.01 EXAMINATION:

A. Verify that excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION:

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on the inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.03 INSTALLATION:

A. Install in accordance with manufacturers' instructions.

B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

C. Route piping in orderly manner and maintain gradient.

D. Install piping to conserve building space and not interfere with use of space.

E. Group piping whenever practical at common elevations.

F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

G. Provide clearance for installation of insulation and access to valves and fittings.

H. Provide access where valves and fittings are not exposed.

I. Establish elevations of buried piping outside the building to ensure not less than three feet of cover.

J. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

K. Provide support for utility meters in accordance with the requirements of utility companies.

L. Prepare support for fittings, supports and accessories not prefinished, ready for finish painting.

M. Install bell and spigot pipe with bell end upstream.

N. Install valves with stem upright or horizontal, not inverted.

O. Slope piping and arrange to drain at low points. Use eccentric reducers to maintain top of pipe level.

3.04 APPLICATION:

A. Use grooved mechanical couplings and fasteners only in accessible locations.

B. Install unions downstream of valves and at equipment or apparatus connections.

C. Install brass male adapters each side of valves in copper piped system. Sweat solder adapters to pipe.

D. Install gate valve for shut-off and to isolate equipment, part of system, or vertical risers.

3.05 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM:

A. Prior to starting work, verify system is complete, flushed and clean.

B. Ensure PH of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).

C. Inject disinfectant, free chlorine in liquid, powder, tablet, or gas form, throughout system to obtain 50 to 80 mg/L residual.

D. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum of 15 percent of outlets.

E. Maintain disinfectant in system for 24 hours.

F. If final disinfectant residual test less than 25 mg/L, repeat treatment.

G. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.

H. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

END OF SECTION 22 02 00

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SECTION 22 05 29
HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Pipe and equipment hangers and supports.

B. Equipment bases and supports.

C. Sleeves and seals.

D. Flashing and sealing equipment and pipe stacks.

1.02 RELATED SECTIONS**:**

Not used.

1.03 REFERENCES:

A. ASME B31.1 - Power Piping.

B. ASME B31.9 - Building Services Piping.

C. ASTM F708 - Design and Installation of Rigid Pipe Hangers.

D. MSS SP58 - Pipe Hangers and Supports - Materials, Design and Manufacturer.

E. MSS SP69 - Pipe Hangers and Supports - Selection and Application.

F. MSS SP89 - Pipe Hangers and Supports - Fabrication and Installation Practices.

PART 2 - PRODUCTS

2.01 PIPE HANGERS AND SUPPORTS:

A. Manufacturers:
1. Grinnell
2. B-Line
3. Unistrut

B. Plumbing Piping - DWV

1. Conform to ASME B31.9.

2. Hangers for Pipe Sizes 2 to 1-1/2 inch: Carbon steel, adjustable swivel, split ring.
3. Hangers for Pipe Sizes 2 inches and over: Carbon steel, adjustable, clevis.
4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
5. Wall Support for Pipe Sizes to 3 inches: Cast iron hook.
6. Wall Support for Pipe Sizes to 4 inches and Over: Welded steel bracket and wrought steel clamp.
7. Vertical Support: Steel riser clamp.
8. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
9. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

C. Plumbing Piping - Water

1. Conform to ASME B31.9.
2. Hangers for Pipe Sizes 2 to 1-1/2 inch: Carbon steel, adjustable swivel, split ring.
3. Hangers for Cold Pipe Sizes 2 inches and over: Carbon steel, adjustable, clevis.
4. Hangers for Hot Pipe Sizes 2 to 4 inches: Carbon steel, adjustable, clevis.
5. Hangers for Hot Pipe Sizes 6 inches and Over: Adjustable steel yoke, cast iron roll, double hanger.
6. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
7. Multiple or Trapeze Hangers for Hot Pipe Sizes 6 inches and Over: Steel channels with welded spacers and hanger rods, cast iron roll.
8. Wall Support for Pipe Sizes to 3 inches: Cast iron hook.
9. Wall Support for Pipe Sizes 4 inches and Over: Welded steel bracket and wrought steel clamp.
10. Wall Support for Hot Pipe Sizes 6 inches and Over: Welded steel bracket and wrought steel clamp with adjustable steel yoke and cast iron roll.
11. Vertical Support: Steel riser clamp.
12. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
13. Floor Support for Hot Pipe Sizes to 4 inches: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
14. Floor Support for Hot Pipe Sizes 6 inches and Over: Adjustable cast iron roll and stand, steel screws, and concrete pier or steel support.
15. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
16. Roof Support: Polycarbonate pipe stand, Micro Industries Model 24R or Equal.

2.02 ACCESSORIES:

A. Hanger Rods: Mild steel threaded both ends, threaded one end, or continuous threaded.

2.03 INSERTS:

A. Inserts: Malleable iron case of galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms; size inserts to suit threaded hanger rods.

2.04 FLASHING:

A. Metal Flashing: 26 gage galvanized steel.

B. Metal Counter flashing: 22 gage galvanized steel.

C. Lead Flashing:
1. Waterproofing: 5 lb/ft^2 sheet lead.
2. Soundproofing: 1 lb/ft^2 sheet lead.

D. Flexible Flashing: 47 mil thick sheet butyl; compatible with roofing.

E. Caps: Steel, 22 gage minimum; 16 gage at fire resistant elements.

2.05 EQUIPMENT CURBS:

A. Fabrication: Welded 18 gage galvanized steel shell and base, mitered 3 inch cant, pitched to match roof slope, 1-1/2 inch thick insulation, factory installed wood nailer.

2.06 SLEEVES:

A. Sleeves for Pipes Through Non-fire Rated Floors: 18 gage galvanized steel.

B. Sleeves for Pipes Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe of 18 gage galvanized steel.

C. Sleeves for Pipes Through Fire Rated and Fire Resistive Floors and Walls, and Fire Proofing: Prefabricated fire rated sleeves including seals, UL listed.

D. Sleeves for Round Duct work: Galvanized steel.

E. Sleeves for Rectangular Duct work: Galvanized steel.

F. Fire stopping Insulation: Glass fiber type, non-combustible.

G. Sealant: Acrylic.

PART 3 EXECUTION

3.01 INSTALLATION:

A. Install in accordance with manufacturer=s instructions.

3.02 INSERTS:

A. Provide inserts for placement in concrete form work.

B. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.

C. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.

D. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.

E. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.

3.03 PIPE HANGERS AND SUPPORTS:

A. Support horizontal piping as scheduled.

B. Install hangers to provide minimum 2 inch space between finished covering and adjacent work.

C. Place hangers within 12 inches of each horizontal elbow.

D. Use hangers within 1-1/2 inch minimum vertical adjustment.

E. Support horizontal cast iron pipe adjacent to each hub, with 5 feet maximum spacing between hangers.

F. Support vertical piping at every floor. Support vertical cast iron pipe at each floor at hub.

G. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.

H. Support riser piping independently of connected horizontal piping.

I. Design hangers for pipe movement without disengagement of supported pipe.

J. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

3.04 EQUIPMENT BASES AND SUPPORTS

A. Provide housekeeping pads of concrete, minimum 4 inches thick and extended 6 inches beyond supported equipment.

B. Provide templates, anchor bolts, and accessories for mounting and anchoring equipment.

C. Construct supports of steel members. Brace and fasten with flanges bolted to structure.

D. Provide rigid anchors for pipes after vibration isolation components are installed.

3.05 FLASHING:

A. Provide flexible flashing and metal Counter flashing where piping and duct work penetrate weather or waterproofed walls, floors, and roofs.

B. Flash vent and soil pipes projecting 3 inches minimum above finished roof surface with lead worked one inch minimum into hub, 8 inches minimum clear on both sides with 24 x 24 inches sheet size. For pipes through outside walls, turn flanges back into wall and caulk, metal counter flash, and seal.

C. Seal drains watertight to adjacent materials.

D. Provide curbs for mechanical roof installations 14 inches minimum height above roofing surface. Flash and counter flash with sheet metal; seal weather tight. Attach Counter flashing mechanical equipment and lap base flashing on roof curbs. Flatten and solder joints.

E. Adjust storm collars tight to pipe with bolts; caulk around top edge. Use storm collars above roof jacks. Screw vertical flange section to face of curb.

3.06 SLEEVES:

A. Set sleeves in position in form work. Provide reinforcing around sleeves.

B. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.

C. Extend sleeves through floors one inch above finished floor level. Caulk sleeves.

D. Where piping or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with fire stopping insulation and caulk. Provide close fitting metal collar or escutcheon covers at both sides of penetration.

E. Install chrome plated steel escutcheons at finished surfaces.

3.07 SCHEDULES:

HANGER ROD (inches)	PIPE SIZE (inches)	HANGER SPACING (feet)
3/8	2 to 1-1/4	6.5
3/8	1-1/2 to 2	10
2	2-1/2 to 3	10
5/8	4 to 6	10
7/8	8 to 12	14
5/8	PVC (all sizes)	6
2	C.I. Bell and Spigot (or No-Hub) and at Joints	5

END OF SECTION 22 05 29 Hangers and Supports for Plumbing Piping and Equipment

SECTION 22 05 53
IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Nameplates.

B. Tags.

C. Pipe Markers.

1.02 REFERENCES:

A. ASME A13.1 - Scheme for the Identification of Piping Systems.

PART 2 - PRODUCTS

2.01 NAMEPLATES:

A. Manufacturers:
   1. Brady
   2. Seton 3. Carlton.

B. Description: Laminated three-layer plastic with engraved black letters on light contrasting background color.

2.02 TAGS:

A. Manufacturers:
   1. Brady
   2. Seton 3. Carlton.

B. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.

C. Chart: Typewritten letter size list in anodized aluminum frame.

2.03 STENCILS:

Not used.

2.04 PIPE MARKERS:

A. Manufacturers:
   1. Brady
   2. Seton 3. Carlton.

B. Color: Conform to ASME A13.1.

D. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.

E. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

F. Underground Plastic Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

2.05 CEILING TACKS:

A. Manufacturers:
1. Brady
2. Seton
3. Carlton.

B. Description: Steel with 3/4 inch diameter color coded head.

C. Color code as follows:
1. Green - Plumbing valves.

2.06 PAINTING:

A. Manufacturers: Products recognized for pipe application. Paint applied directly to elastomeric insulation shall be made specifically for that purpose.

B. Description: Paint all exposed gas piping. Employ qualified craftsman with a minimum of three years experience in pipe painting.

PART 3 EXECUTION

3.01 PREPARATION:

A. Degrease and clean surfaces to receive adhesive for identification materials.

B. Prepare surfaces for painting.

3.02 INSTALLATION:

A. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.

B. Install tags with corrosion resistant chain.

C. Install plastic pipe markers in accordance with manufacturer=s instructions.

D. Install plastic pipe marker complete around pipe in accordance with manufacturer=s instructions.

E. Install underground plastic pipe markers 6 to 8 inches below finished grade, directly above buried pipe.

F. Identify air handling units with tags.

G. Identify valves in main and branch piping with tags.

H. Identify piping, concealed or exposed, with plastic pipe markers. Use tags on piping 3/4 inch diameter and smaller. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, and at each obstruction.

I. Provide ceiling tacks to locate valves or dampers above T-bar type panel ceilings. Locate in corner of panel closet to equipment.

END OF SECTION 22 05 53 Identification for Plumbing and Equipment

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SECTION 22 07 00
PLUMBING INSULATION

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Piping insulation.
B. Jackets and accessories.

1.02 RELATED SECTIONS:

Not used.

1.03 REFERENCES:

A. ASTM C195 - Mineral Fiber Thermal Insulation Cement
B. ASTM C335 - Steady-State Heat Transfer Properties of Horizontal Pipe Insulation
C. ASTM C449 - Mineral Fiber and Hydraulic-setting Thermal Insulating and Finishing Cement.
D. ASTM 534 - Performed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form.
E. ASTM C547 - Mineral Fiber and Performed Pipe Insulation.

1.04 QUALITY ASSURANCE:

A. Materials: Flame spread/smoke developed rating of 25/50 or less in accordance with ASTM E84 suitable for return air plenums.

1.05 QUALIFICATIONS:

A. Applicator: Company specializing in performing the work of this section with a minimum of three years experience.

1.06 DELIVERY, STORAGE, AND HANDLING:

A. Deliver, store protect and handle products to site under provisions of Section 22 02 00.

B. Deliver materials to site in original factory packaging, labeled with manufacture's identification, including product density and thickness

C. Store insulation in original wrapping and protect form weather and construction traffic.

D. Protect insulation against dirt, water, chemical, and mechanical damage.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Maintain ambient temperatures and conditions required by manufactures of adhesives, mastics, and insulation cements.

B. Maintain temperature during and after installation for minimum of 24 hours.

PART 2 - PRODUCTS

2.01 GLASS FIBER:

A. Manufacturers:
1. Owen's-Corning,
2. Manville
3. Knauf Corporation

B. Installation: ASTM C547; rigid molded, noncombustible.

1. 'K' ('ksi') value: ASTM C335, 0.24 at 75 degrees F.
2. Minimum Service Temperature: -20 degrees F.
3. Maximum Service Temperature: 300 degrees F.
4. Maximum moisture absorption: 0.2 percent by volume.

C. Vapor Barrier Jacket

1. ASTM C921, White kraft paper reinforced with glass fiber yarn and bonded to aluminized film.
2. Moisture Vapor Transmission: ASTM E96; 0.02 perm inches.
3. Secure with self sealing longitudinal laps and butt strips.
4. Secure outward with outward clinch expanding staples and vapor barrier mastic.

D. Tie Wire: 18 gage stainless steel with twisted ends on maximum 12 inch centers.

E. Vapor Barrier Lap Adhesive
1. Compatible with insulation.

F. Insulating Cement/Mastic
1. ASTM C185; hydraulic setting on mineral wool.

PART 3 EXECUTION

3.01 Examination:

A. Verify that piping has been tested before applying insulation materials.

B. Verify that surfaces are clean, foreign material removed, and dry.

3.02 INSTALLATION:

A. Install materials in accordance with manufacturer's instructions.

B. On exposed piping, locate insulation and cover seams in least visible locations.

C. Insulated cold pipes conveying fluids below ambient temperature:

1. Provide vapor barrier jackets, factory applied or field applied.
2. Insulate fittings, joints, and valves with molded insulation of like material and thickness of adjacent pipe.
3. Finish with glass cloth and vapor barrier adhesive.
4. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations.
5. Insulate entire system including fittings, valves, unions, flanges, strainer, flexible connections, and expansion joints.

D. For insulated pipes covering fluids above ambient temperature:

1. Provide standard jackets, with vapor barrier, factory applied or field applied.
2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe.
3. Finish with glass cloth and adhesive.
4. Not used
5. For hot piping conveying fluids 140 degrees F or less, do not insulate flanges and unions at equipment, but level and seal ends of insulation.
6. For hot piping conveying fluids over 140 degrees F, insulate flanges and unions at equipment.

E. Inserts and Shields

1. Application: Piping 1-1/2 inches diameter or larger.
2. Shields galvanized steel between pipe hangers or pip hanger rolls and inserts.
3. Insert location: Between support shields and piping under the finish jacket.
4. Insert Configuration: Minimum of 6 inches long, of same thickness and contour as adjoining insulation; maybe factory fabricated.
5. Insert Materials: Hydrous calcium silicate insulation

F. Finish insulation at supports, protrusions, and interruptions.

3.03 GLASS FIBER INSULATION SCHEDULE:

PIPING SYSTEMS	PIPE SIZE	THICKNESS (Inch)
Domestic Hot Water & Recirc	up to 1 ½”	1”
	2” and larger	2”
Domestic Cold Water	All	1/2”

END OF SECTION 22 07 00 - Plumbing Insulation

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SECTION 23 01 00
HVAC GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 CONDITIONS OF THE CONTRACT

A. The conditions of the Contract (General, Supplementary, and other Conditions) and the General Requirements are hereby made a part of this Section.

B. This Section is a Division 23 Basic Materials and Methods Section and is a part of each Division 23 Section.

C. The contractor shall be responsible for construction coordination of all work described in this section with the work specified in other sections of the specifications and shown on the Drawings. In advance of construction, coordinate and work out any minor problems with other trades to avoid conflicts therewith. However, if other minor problems are encountered, bring these problems to the attention of the Designer, who will make the final decisions as to correction.

D. If substituted equipment is to be used, the Contractor shall revise the floor plans shown on the Drawings, indicating to scale, the equipment to be used. The purpose of these revised scale plans is to identify any problems with substituted equipment, and access and clearance requirements are maintained. These revised scale plans are to be submitted with the substituted equipment submittals.

1.02 WORK INCLUDED

A. This Section consists of General Requirements and Standard Specifications covering certain parts of work under Division 23 and is supplemented by other Division 23 sections covering additional work, requirements, and materials specifically applicable to the work of each section.

1.03 CODE AND REGULATORY AGENCY COMPLIANCE

A. Provide work and materials in full accordance with the latest rules and regulations of the following:

1. Occupational Safety and Health Administration

2. 2010 Arkansas Mechanical Code

3. National Fire Protection Association, 101, Life Safety Code

1.04 QUALITY ASSURANCE

A. Manufacturers: Only firms regularly engaged in manufacturing of the HVAC services, equipment and specialties of types and sizes required, whose products have been in satisfactory use in similar service shall be used on this project.

B. Installers Qualifications: Only firms with successful installation experience on projects with work similar to that required for this project shall perform work on this project.

1.05 SUBMITTALS

A. Comply with Section 01300, Submittals.

1.06 SITE EXAMINATION

A. Examine site, verify dimensions and locations against Drawings, and inform self of conditions under which work is to be done before submitting proposal. No allowance will be made for extra expense on account of error.

B. Information shown relative to existing services is based upon available records and data but is approximate only. Make minor deviations found necessary to conform with actual locations and conditions without extra cost. Verify location and elevation of utilities prior to commencement of excavation for new piping or its installation.

1.07 PLACEMENT OF EQUIPMENT AND WORK

A. The placement of substituted (approved equal) equipment and specified equipment in the locations shown on the drawings shall be the Contractors responsibility. The Contractor shall verify that all substituted and specified equipment will fit, operate and have clearances and accessibility for maintenance, inspections, and operation within the space shown on the Drawings and/or clearances and accessibility cannot be achieved, he shall bring these problems to the attention of the Designer who will make the final decision as to the method of correction. Corrections to work already completed and in-place shall not constitute an increase in the contract amount.

B. Move equipment and/or work into spaces through openings provided or located in the spaces during construction, as required.

C. Do disassembling and reassembling of equipment or other work necessary to accomplish this requirement without extra cost to the Owner. Do not disassemble or reassemble any equipment in order to locate it in the space.

1.08 MATERIAL LIST AND SUBSTITUTIONS

A. Comply with Supplementary General Conditions.

1.09 MAINTENANCE AND OPERATING INSTRUCTIONS

A. Incorporate complete operating instructions including starting, stopping, and description of emergency manual operation methods for the systems provided.

B. Provide maintenance instructions for each item of individual equipment covering pertinent maintenance data, such as lubricants to be used, frequency of lubrications, inspections required, adjustments, belt and pulley sizes, etc.

C. Provide parts, bulletins containing manufacturer=s bulletins with parts numbers, instructions, etc., for each item of equipment. Strip bulletins so that useless bulk is avoided.

D. Post service telephone numbers and/or addresses in an appropriate place as designated by the Designer.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Mention herein or on Drawings requires that this Contractor provide each item listed of quality. All material shall be new, full weight, standard in all respects, and in first-class condition. Provide materials of the same brand of manufacture throughout for each class of material or equipment where possible. Materials shall be tested within the Continental United States by independent, nationally recognized testing agency and shall be listed in accordance with testing agency requirements.

B. The grade or quality of materials desired is indicated by the trade names or catalog numbers stated herein. The catalog numbers and specification are for bidding purposes only. Actual equipment submitted and ordered shall be verified to be appropriate for indicated use.

C. Dimension, sizes, and capacities shown are a minimum and shall not be changed without permissions of the Designer.

2.02 MATERIALS FURNISHED

A. Identify all materials and equipment by manufacturer=s name and model number. Remove unidentified materials and equipment from site.

B. Equipment specified by manufacturer=s number shall include all accessories, controls, etc., listed in catalog as standard with equipment. Furnish optional or additional accessories as specified.

C. Equipment or material damaged during transportation, installation, or operation is considered as totally damaged. Replace with new equipment. Variance for this permitted only with written consent.

PART 3 - EXECUTION

3.01 DRAWINGS AND COORDINATION

A. General arrangement and location of piping, ductwork, equipment, etc., are shown on Drawings or herein specified. Careful examine other work that may conflict with this work. Install this work in harmony with other crafts and at proper time to avoid delay of work.

B. In advance of construction, work out minor changes and relocations to suit actual conditions and work of other trades to avoid conflict therewith. Any change in rerouting ductwork, piping and equipment shall not be cause for additional cost.

C. The Sub-Contractor shall verify that the measurement of constructed rooms, spaces and areas are as shown on Drawings. Any measurement deviation and/or discrepancies shall be brought to the attention of the Designer who will make the final decision as to the method of correction. Corrections to work already completed and in place shall be done at the Contractor=s expense.

D. In addition, obtain all necessary information from the other trades regarding centers of partitions, walls, location of plumbing mains, fire sprinkler mains, and electrical conduits, ducts, pipes, etc., in order that pipes equipment, and ductwork may be placed in their correct position.

E. Execute any work or apparatus shown on the Drawings and not mentioned in the specifications, or vice versa, the same as if specifically mentioned by both Omission from Drawings or specifications of any minor details of construction, installation, materials or essential specialties does not relieve this Contractor from furnishing same in place complete.

F. Furnish and install any incidental work not shown or specified which can reasonably be inferred as part of the work and necessary to provide a complete and workable system.

G. Furnish materials and work at proper time to avoid delay of the work.

3.02 CLOSING IN ON UNINSPECTED WORK

A. Do not allow or cause work installed to be covered up or enclosed before it has been inspected and tested. Should work be enclosed or covered up before it has been inspected and tested, Contractor shall uncover work at own expense. After it has been inspected and tested, make repairs necessary to restore work of other Contractors to condition in which it was found at time of cutting.

B. Two (2) sets of Drawings showing all revisions shall be immediately presented to Designer for his records. Maintain additional copies on the project as necessary to comply with@RECORD DRAWINGS@ requirement of the General Requirements.

C. Incorporate all revisions into record Drawings. These drawings shall be up to date at the end of every week and shall be available to Designer at any time for inspection.

3.03 GUARANTEE

A. Be responsible for work done and material installed under these plans and specifications. Repair or replace, as may be necessary, any defective work, material, or part which may show itself within one (1) year of filing of Notice of Completion and be responsible for damage to other materials, furnishing, equipment, or premises caused by such defects during this period, if in the opinion of the Designer said defect is due to imperfection of material or workmanship. Provide all such work and materials at no cost to Owner.

B. Be responsible for damage to any part of premises during guarantee period caused by leaks or breaks in work furnished and/or installed under this Section.

C. Replace refrigerant, lubricants, or gases lost as a result of defects, breaks, or leaks in work.

3.04 RECORD DRAWINGS

A. In addition, furnish one (1) tracing showing all outside utility connections, piping, etc., installed under this contract. Locate and dimension all work with reference to permanent landmarks.

B. Match all symbols and designations used in contract Drawings when preparing ARecord@ Drawings.

C. Indicate clearly and correctly all work installed differently from that shown, and maintain records up to date as work progresses. Include invert elevations of pipes below grade of floor, the floor lines, plugged wyes, tees, caps, exact locations and sizing or piping, location of valves, and the like. Dimension locations from structural points.

D. Properly identify all stubs for future connections as to locations and use by setting of concrete marker at finished grade in manner suitable to Designer.

3.05 MAINTENANCE DATA

A. Submit maintenance data and parts lists for all HVAC systems materials and products. Include product data, shop drawings, and Record Drawings in the maintenance manual all in allowance with the requirements of Division 1.

3.06 CLEANING UP

A. Comply with Supplementary General Conditions.

END OF SECTION 23 01 00 - HVAC General Requirements

SECTION 23 05 29
HVAC SUPPORTS AND ANCHORS

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Pipe and equipment hangers and supports.

B. Equipment bases and supports.

C. Sleeves and seals.

D. Flashing and sealing equipment and pipe stacks.

1.02 RELATED SECTIONS**:**

A. Section 22 07 00 - Piping Insulation.

B. Section 22 01 00 - Plumbing Piping.

1.03 REFERENCES:

A. ASME B31.1 - Power Piping.

B. ASME B31.2 - Fuel Gas Piping.

C. ASME B31.5 - Refrigeration Piping.

D. ASME B31.9 - Building Services Piping.

E. ASTM F708 - Design and Installation of Rigid Pipe Hangers.

F. MSS SP58 - Pipe Hangers and Supports - Materials, Design and Manufacturer.

G. MSS SP69 - Pipe Hangers and Supports - Selection and Application.

H. MSS SP89 - Pipe Hangers and Supports - Fabrication and Installation Practices.

PART 2 - PRODUCTS

2.01 PIPE HANGERS AND SUPPORTS:

A. Manufacturers:
   1. Grinnel Mechanical Products
   2. Cooper B-Line Inc,

3. National Pipe Hanger Corporation

B. Plumbing Piping - DWV, roof drainage:

1. Conform to ASME B31.9.
2. Hangers for Pipe Sizes 2 to 1-1/2 inch: Carbon steel, adjustable swivel, split ring.
3. Hangers for Pipe Sizes 2 inches and over: Carbon steel, adjustable, clevis.
4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
5. Wall Support for Pipe Sizes to 3 inches: Cast iron hook.
6. Wall Support for Pipe Sizes to 4 inches and Over: Welded steel bracket and wrought steel clamp.
7. Vertical Support: Steel riser clamp.
8. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
9. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

C. Plumbing Piping - Water, Gas

1. Conform to ASME B31.9.
2. Hangers for Pipe Sizes 2 to 1-1/2 inch: Carbon steel, adjustable swivel, split ring.
3. Hangers for Cold Pipe Sizes 2 inches and over: Carbon steel, adjustable, clevis.
4. Hangers for Hot Pipe Sizes 2 to 4 inches: Carbon steel, adjustable, clevis.
5. Hangers for Hot Pipe Sizes 6 inches and Over: Adjustable steel yoke, cast iron roll, double hanger.
6. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
7. Multiple or Trapeze Hangers for Hot Pipe Sizes 6 inches and Over: Steel channels with welded spacers and hanger rods, cast iron roll.
8. Wall Support for Pipe Sizes to 3 inches: Cast iron hook.
9. Wall Support for Pipe Sizes 4 inches and Over: Welded steel bracket and wrought steel clamp.
10. Wall Support for Hot Pipe Sizes 6 inches and Over: Welded steel bracket and wrought steel clamp with adjustable steel yoke and cast iron roll.
11. Vertical Support: Steel riser clamp.
12. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
13. Floor Support for Hot Pipe Sizes to 4 inches: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
14. Floor Support for Hot Pipe Sizes 6 inches and Over: Adjustable cast iron roll and stand, steel screws, and concrete pier or steel support.
15. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
16. Roof Support: Polycarbonate pipe stand.

2.02 ACCESSORIES:

A. Hanger Rods: Mild steel threaded both ends, threaded one end, or continuous threaded.

2.03 INSERTS:

A. Inserts: Malleable iron case of galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms; size inserts to suit threaded hanger rods.

2.04 FLASHING:

A. Metal Flashing: 26 gage galvanized steel.

B. Metal Counter flashing: 22 gage galvanized steel.

C. Lead Flashing:
1. Waterproofing: 5 lb/ft^2 sheet lead.
2. Soundproofing: 1 lb/ft^2 sheet lead.

D. Flexible Flashing: 47 mil thick sheet butyl; compatible with roofing.
E. Caps: Steel, 22 gage minimum; 16 gage at fire resistant elements.

2.05 EQUIPMENT CURBS:

A. Fabrication: Welded 18 gage galvanized steel shell and base, mitered 3 inch cant, pitched to match roof slope, 1-1/2 inch thick insulation, factory installed wood nailer.

2.06 SLEEVES:

A. Sleeves for Pipes Through Non-fire Rated Floors: 18 gage galvanized steel.

B. Sleeves for Pipes Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe of 18 gage galvanized steel.

C. Sleeves for Pipes Through Fire Rated and Fire Resistive Floors and Walls, and Fire Proofing: Prefabricated fire rated sleeves including seals, UL listed.

D. Sleeves for Round Duct work: Galvanized steel.

E. Sleeves for Rectangular Duct work: Galvanized steel.

F. Fire stopping Insulation: Glass fiber type, non-combustible.

G. Sealant: Acrylic.

PART 3 EXECUTION

3.01 INSTALLATION:

A. Install in accordance with manufacturer=s instructions.

3.02 INSERTS:

A. Provide inserts for placement in concrete form work.

B. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.

C. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.

D. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.

E. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.

3.03 PIPE HANGERS AND SUPPORTS:

A. Support horizontal piping as scheduled.

B. Install hangers to provide minimum 2 inch space between finished covering and adjacent work.

C. Place hangers within 12 inches of each horizontal elbow.
D. Use hangers within 1-1/2 inch minimum vertical adjustment.
E. Support horizontal cast iron pipe adjacent to each hub, with 5 feet maximum spacing between hangers.

F. Support vertical piping at every floor. Support vertical cast iron pipe at each floor at hub.

G. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.

H. Support riser piping independently of connected horizontal piping.

I. Design hangers for pipe movement without disengagement of supported pipe.

J. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

K. All duct work and piping shall be provided with seismic restraints in accordance with The Seismic Restraint Manual: Guidelines for Mechanical Systems dated 1991, as published by SMACNA and in accordance with local codes.

3.04 EQUIPMENT BASES AND SUPPORTS

A. Provide housekeeping pads of concrete, minimum 4 inches thick and extended 6 inches beyond supported equipment.

B. Provide templates, anchor bolts, and accessories for mounting and anchoring equipment.

C. Construct supports of steel members. Brace and fasten with flanges bolted to structure.

D. Provide rigid anchors for pipes after vibration isolation components are installed.

3.05 FLASHING:

A. Provide flexible flashing and metal Counter flashing where piping and duct work penetrate weather or waterproofed walls, floors, and roofs.

B. Flash vent and soil pipes projecting 3 inches minimum above finished roof surface with lead worked one inch minimum into hub, 8 inches minimum clear on both sides with 24 x 24 inches sheet size. For pipes through outside walls, turn flanges back into wall and caulk, metal counter flash, and seal.

C. Seal drains watertight to adjacent materials.

D. Provide curbs for mechanical roof installations 14 inches minimum height above roofing surface. Flash and counter flash with sheet metal; seal weather tight. Attach Counter flashing mechanical equipment and lap base flashing on roof curbs. Flatten and solder joints.

E. Adjust storm collars tight to pipe with bolts; caulk around top edge. Use storm collars above roof jacks. Screw vertical flange section to face of curb.

3.06 SLEEVES:

A. Set sleeves in position in form work. Provide reinforcing around sleeves.

B. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.

C. Extend sleeves through floors one inch above finished floor level. Caulk sleeves.

D. Where piping or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with fire stopping insulation and caulk. Provide close fitting metal collar or escutcheon covers at both sides of penetration.

E. Install chrome plated steel escutcheons at finished surfaces.

3.07 SCHEDULES:

HANGER ROD (inches)	PIPE SIZE (inches)	HANGER SPACING (feet)
3/8	2 to 1-1/4	6.5
3/8	1-1/2 to 2	10
2	2-1/2 to 3	10
5/8	4 to 6	10
7/8	8 to 12	14
5/8	PVC (all sizes)	6
2	C.I. Bell and Spigot (or No-Hub) and at Joints	5

END OF SECTION 23 05 29 HVAC Supports and Anchors

SECTION 23 05 53
IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Nameplates.

B. Tags.

C. Pipe Markers.

1.02 REFERENCES:

A. ASME A13.1 - Scheme for the Identification of Piping Systems.

PART 2 - PRODUCTS

2.01 NAMEPLATES:

A. Manufacturers:
   1. Brady
   2. Seton
   3. Carlton.

B. Description: Laminated three-layer plastic with engraved black letters on light contrasting background color.

2.02 TAGS:

A. Manufacturers:
   1. Brady
   2. Seton
   3. Carlton.

B. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.

C. Chart: Typewritten letter size list in anodized aluminum frame.

2.03 STENCILS:

Not used.

2.04 PIPE MARKERS:

A. Manufacturers:
   1. Brady
   2. Seton
   3. Carlton.

B. Color: Conform to ASME A13.1.

C. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.

D. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

E. Underground Plastic Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

2.05 CEILING TACKS:

A. Manufacturers:
   1. Brady
   2. Seton
   3. Carlton.

B. Description: Steel with 3/4 inch diameter color coded head.

C. Color code as follows:
   1. Yellow - HVAC equipment.
   2. Red - Fire dampers/smoke dampers.
   3. Green - Plumbing valves.

2.06 PAINTING:

A. Manufacturers: Products recognized for pipe application. Paint applied directly to elastomeric insulation shall be made specifically for that purpose.

B. Description: Paint all exposed gas piping. Employ qualified craftsman with a minimum of three years experience in pipe painting.

PART 3 EXECUTION

3.01 PREPARATION:

A. Degrease and clean surfaces to receive adhesive for identification materials.

B. Prepare surfaces for painting.

3.02 INSTALLATION:

A. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.

B. Install tags with corrosion resistant chain.

C. Install plastic pipe markers in accordance with manufacturer=s instructions.

D. Install plastic pipe marker complete around pipe in accordance with manufacturer=s instructions.

E. Install underground plastic pipe markers 6 to 8 inches below finished grade, directly above buried pipe.

F. Identify air handling units with tags.

G. Identify valves in main and branch piping with tags.

H. Identify piping, concealed or exposed, with plastic pipe markers. Use tags on piping 3/4 inch diameter and smaller. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, and at each obstruction.

I. Identify ductwork with stenciled painting. Identify with air handling unit identification number and area served. Locate identification at air handling unit, at each side of penetration of structure or enclosure, and at each obstruction.

J. Provide ceiling tacks to locate valves or dampers above T-bar type panel ceilings. Locate in corner of panel closet to equipment.

END OF SECTION 23 05 53 Identification for HVAC Piping and Equipment

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SECTION 23 05 93
TESTING, ADJUSTING, BALANCING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Extent of work:

1. Extent of testing, adjusting and balancing work is indicated by requirements of this Section, and also by drawings and schedules, and is defined to include, but is not necessarily limited to, air distribution system, and associated equipment and apparatus of HVAC work.

2. The work consists of setting speed and volume (flow) adjusting facilities provided for systems, recording data, conducting tests, preparing and submitting reports, and recommending modifications to work as required by contract documents.

B. Component types of testing, adjusting and balancing specified in this Section includes fans, air-conditioning units, ductwork systems.

1.02 QUALITY ASSURANCE

A. Industry standards: Comply with American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE), National Environmental Balancing Bureau (NEBB) or Associated Air Balance Councils (AABC) recommendations pertaining to measure, instruments, and testing, adjusting, and balancing. Provide an independent Test and Balance by a certified technician or hire HVAC design engineering firm with Professional Engineer and five years experience.

1.03 SUBMITTALS

A. Comply with Section 01300, Submittals.

B. Submit certified test report signed by Test and Balance Supervisor who performed TAB work. Include identification and types of instruments used and their most recent calibration data with submission of final test report.

C. Maintenance data: Include in maintenance manuals, copies of certified test reports.

1.04 JOB CONDITIONS

A. Do not proceed with testing, adjusting, and balancing work until work has been completed
and is operable. Ensure that there is no latent residual work still to be completed. If Test and Balanced is performed during construction it will be deemed null and void and

performed over in presence of Designer at no cost to the Owner and the Contractor shall incur all Designer=s cost for supervision.

B. Do not proceed until work scheduled for testing, adjusting, and balancing is clean free from debris, dirt, and discarded building materials.

PART 2 - PRODUCTS

2.01 PATCHING MATERIALS

A. Except as otherwise indicated, use same products as used by original Installer for patching holes in insulation, ductwork and housing which have been cut or drilled for test purposes, including access for test instruments, attaching jigs, and similar purposed. At Tester=s option, plastic plugs with retainers may be used to patch drilled holes in ductwork and housings. Do not leave test holes uncovered.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examine installed work and conditions under which testing is to be done to ensure that work has been completed, cleaned and is operable. Do not proceed with TAB work until unsatisfactory conditions have been corrected in a manner acceptable to Tester.

B. Air balance: The air balance shall include the following air tests in accordance with the following requirements:

1. Test and adjust blower RPM or vane setting to design requirements (within +/- 5% of design requirements).

2. Test and record motor full load amperes.

3. Make pilot tube traverse of main supply ducts and obtain design cfm at fans.

4. Test and record system static pressures, suction and discharge.

5. Test and adjust system for design recirculated air cfm.

6. Test and adjust outside system for design cfm outside air.

7. Test and adjust exhaust air system for design cfm.

8. Test and record entering air temperatures of heating and cooling coils (both db and wb of cooling coils).

9. Test and record leaving air temperatures of heating and cooling coils (both db and wb of cooling coils).

10. Adjust all main supply and return air ducts to proper design cf.

11. Adjust all zones to proper design cfm, supply and return.

12. Test and adjust each outlet and inlet (diffuser, grille and register) to within +/- 10% of design requirements. Use proportional method of balancing. Do not test each outlet and inlet with hood or similar device by adjusting air flow for since reading. (Testing and adjusting single outlet without proportional balancing will result in
unbalance when other outlets and inlets are adjusted.

13. Size, type and manufacturer of diffusers, grilles, registers, and tested equipment shall be identified and listed. Manufacturer=s ratings on all equipment shall be used to make required calculations.

14. Readings and tests of diffusers, grilles, and registers shall include required fpm velocity and test resultant velocity, required cfm and test resultant cfm after adjustments.

15. In cooperation with the control manufacturer=s representative, setting adjustments of automatically operated dampers to operate as specified, indicated and/or noted.

16. Adjust diffusers, grilles, and registers to minimum drafts in all areas.

17. Prepare reports of test results, including instrumentation calibration reports, in format recommended by applicable standards.

18. Patch holes in insulation, ductwork and housings, which have been cut or drilled for test purposes, in manner recommended by original Installer.

19. Mark equipment setting, including damper control positions, valve indicators, fan speed control levers, and similar controls and devices, to show final settings at completion of TAB work. Provide markings with paint or other suitable permanent identification materials.

END OF SECTION 23 05 93 Testing Adjusting, Balancing

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SECTION 23 07 00

HVAC INSULATION

PART 1 - GENERAL

1.01 SCOPE

A. Piping system insulation: Cooling coil condensate, condenser water piping inside building, etc.

B. Ductwork system insulation.

1.02 QUALITY ASSURANCE

A. Flame/smoke ratings. Provide composite HVAC insulation (insulation, jackets, coverings, sealers, mastics and adhesives) with Flame-Spread rating of 25 or less, and smoke-developed rating of 50 or less, as tested by ASTM E 84 (NFPA 225) method for ductwork and equipment. Flame-Spread of 25 or less and smoke-developed rating of 150 or less for Pipe Insulation and Fittings.

1.03 SUBMITTALS

A. Product data: Submit manufacturer=s specifications and installation instructions for each type of HVAC insulation. Submit schedule showing manufacturer=s product number, thickness, and furnished accessories for each HVAC system requiring insulation.

B. Certifications: Submit manufacturer=s certifications to show compliance with these specifications and governing regulations. Include proof of compliance for test of products for fire rating, corrosiveness, and compressive strength.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver insulation, coverings, cements, adhesives, and coatings to site in containers with manufacturer=s stamp or label affixed, showing fire hazard ratings or products.

B. Protect insulation against dirt, water, chemical or HVAC damage. Do not install damaged insulation.

PART 2 - PRODUCTS

2.01 MANUFACTURER'S

A. KNAUF Fiberglass
B. Armstrong World Industries, Inc.
C. Johns-Mansville Corporation
D. Owens-Corning Fiberglass Corporation
E. Pittsburg Corning Corporation.

2.02 PIPE INSULATION MATERIALS

A. Fiberglass pipe insulating: ASTM C547, Class 1 for piping where highest temperature does not exceed 450EF.

B. Cellular glass pipe insulation: ASTM C552, Type II, Class 2.

C. Polyethylene: ASTM C-177 and D-1622.

D. Jackets and piping insulation: ASTM C921, Type I for piping with temperatures below ambient, Type II for piping with temperatures above ambient. Type I may be used for all piping at Installers option. All jackets, piping insulation, and insulation sealing and encasing components shall comply with local, state, and county smoke and flame-spread requirements.

1. Encase pipe fittings insulation with one-piece pre-molded or job sie fabricated fitting covers, fastened as per manufacturer=s recommendations. Provide one coat of hardcast over each fitting cover.

2. Encase exterior piping insulation with aluminum jacket with weather-proof construction.

E. Staples, bands, wires, and cement: As recommended by insulation manufacturer for applications indicated.

F. Adhesives, sealers, and protective finishes: As recommended by insulation manufacturer for applications indicated.

2.03 DUCTWORK INSULATION MATERIALS

A. Rigid fiberglass ductwork insulation: ASTM C612, Class 1 (non-load bearing) where insulation is not subjected to compressive loading, Class 2 (load bearing) where insulation is subjected to compressive loading; except provide higher Class where indicated.

B. Flexible fiberglass ductwork insulation: ASTM C553, Type I, Class B-4.

C. Cellular glass ductwork insulation: ASTM C552, Type I.

D. Jackets for ductwork insulation: ASTM C921, Type I for ductwork with temperatures below ambient; Type II for ductwork with temperatures above ambient.

E. Ductwork insulation accessories: Provide staples, bands, wires, tape, anchors, corner angles and similar accessories as recommended by insulation manufacturer for applications indicated.

2.04 EQUIPMENT INSULATION MATERIALS

A. Rigid fiberglass equipment insulation: ASTM C612.

B. Flexible fiberglass equipment insulation: ASTM C553, Type 1, Class B-4.

C. Cellular glass equipment insulation: ASTM C533, Type 1, Block.

D. Jacketing material for equipment insulation: Provide pre-sized glass cloth jacketing materials, not less than 7.8 ounces per square yard, except as otherwise indicated.

E. Equipment insulation compounds: Provide adhesives, cements, sealers, mastics and protective finishes as recommended by insulation manufacturer for applications indicated. All equipment insulation compounds shall comply with local, state, and county smoke and flame-spread requirements.

F. Equipment insulation accessories: Provide staples, bands, wire, wire netting, tape corner angles, anchors, stud pins and metal covers as recommended by insulation manufacturer for applications indicated.

PART 3 - EXECUTION

3.01 HVAC PIPING SYSTEM INSULATION

A. Insulate all refrigerant piping with 1 ½" insulation

3.02 DUCTWORK SYSTEM INSULATION

A. Rectangular low pressure ductwork shall be externally insulated downstream and upstream of air handler unit unless otherwise indicated on drawings.

B. Insulation of ductwork exposed to weather: Protect outdoor insulation from weather by installing outdoor protective sheet metal jacket with finish. Jacket shall be made weather tight and sealed.

C. Rectangular and round externally insulated ductwork. Insulate the following with R-6, 3/4 lb. density fiberglass with vapor barrier.

1. Outdoor air ductwork.

2. Supply air duct.

3. Return air ductwork.

4. Exhaust air ductwork within 10' of roof.

5. Bells of supply diffusers.

6. HVAC plenums and unit housings not pre-insulated at factory.

D. Hot ductwork (above ambient temperature): Insulate range and hood exhaust ductwork, with 2" thick flexible fiberglass.

E. Ductwork in an attic shall have R-8 insulation.

3.03 EQUIPMENT INSULATION

A. Cold equipment (below ambient temperature): Insulate HVAC equipment to have 1/2" thick fiberglass with vapor barrier.

3.04 INSTALLATION OF PIPING INSULATION

A. Install insulation products in accordance with manufacturer=s written instructions, and in accordance with recognized industry practices to ensure that insulation serves its intended purpose.

B. Install insulation on pipe systems subsequent to testing acceptance of tests.

C. Install insulation materials with smooth and even surfaces. Insulate each continuous run of piping with full-length units of insulation, with single cut piece to complete run. Do not use cut pieces or scraps abutting each other.

D. Clean and dry pipe surfaces prior to insulating. Butt insulation joints firmly together to ensure complete and tight fit over surfaces to be covered.

E. Maintain integrity of vapor-barrier jackets on pipe insulation, and protect to prevent puncture or other damage.

F. Cover valves, fittings and similar items in each piping system with equivalent thickness and composition of insulation as applied to adjoining pipe run. Install factory molded, pre-cut or job fabricated units (at Installer=s option) except where specific form or type is indicated.

G. Extend piping insulation without interruption through walls, floors and similar piping penetrations, except where otherwise indicated.

H. Install protective metal shields and insulated inserts wherever needed to prevent compression of insulation.

I. Pipe hanger insulation inserts: Butt pipe insulation against pipe hanger insulation inserts. For hot pipes, apply 3" wide vapor barrier tape or band over the butt joints. For cold piping, apply wet coat of vapor barrier lap cement on butt joints and seal joints with 3" wide vapor barrier tape or band.

3.05 INSTALLATION OF DUCTOWRK INSULATION

A. Install insulation products in accordance with manufacturer=s written instructions, and in accordance with recognized industry practices to ensure that insulation serves its intended purpose.

B. Install insulation materials with smooth and even surfaces.

C. Clean and dry ductwork prior to insulating. Butt insulation joints firmly together to ensure complete and tight fit over surfaces to be covered.

D. Maintain integrity of vapor-barrier on ductwork insulation, and protect it to prevent puncture and other damage.

E. Butt external ductwork insulation up to wall, fasten insulation to ductwork at wall as to provide airtight fitting. Do not fasten insulation to wall.

F. Ductwork exposed to weather: Protect outdoor insulation from weather by installing outdoor protective finish aluminum jacketing as recommended by manufacturer, or as indicated on drawings.

G. Corner ductwork: Except for oven and hood exhaust duct insulation, install corner angles on external corners of insulation on ductwork in exposed finished spaces before covering with jacketing.

3.06 INSTALLATION OF EQUIPMENT INSULATION

A. Install insulation materials with smooth and even surfaces and on clean and dry surfaces. Redo poorly fitted joints. Do not use mastic or joint sealer as filler for gapping joints and excessive voids resulting from poor workmanship.

B. Maintain integrity of vapor-barrier on equipment insulation and protect it to prevent puncture and other damage.

3.07 PROTECTION AND REPLACEMENT

A. Replace damaged insulation which cannot be repaired satisfactorily, including units with vapor barrier damage and moisture saturated units.

B. Protection: Insulation Installer shall advice Contractor of required protection for insulation work during remainder of construction period, to avoid damage and deterioration.

END OF SECTION 23 07 00 HVAC Insulation

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SECTION 23 31 13
METAL DUCTWORK

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Extent of metal ductwork is indicated on drawings or specified here within.

B. Refer to Section 23 07 00 for exterior insulation of metal ductwork; not work of this section.

C. Refer to Section 23 05 93 for testing, adjusting, balance of metal ductwork systems, not work of this section.

1.02 QUALITY ASSURANCE

A. Codes and standards:

1. SMACNA standards: Comply with SMACNA=s AHVAC Duct Construction Standards, Metal and Flexible@ for fabrication and installation of metal ductwork or comply with ASHRAE Handbook, Equi9pment Volume, Chapter 1, Duct Construction@, for fabrication and installation of metal ductwork.

2. NFPA compliance: Comply with NFPA 90A Standard for the Installation of Air Conditioning and Ventilating Systems@ and NFPA 90B Standard for the Installation of Warm Air Heating and Air Conditioning Systems@.

B. Field reference manual: Have available for reference at project field office, copy of SMACNA AHVAC Duct Construction Standards, Metal and Flexible@.

1.03 SUBMITTALS

A. Comply with Section 013000. Product data: Submit manufacturer=s technical product data and installation instructions for metal ductwork materials and products.

B. Record drawings: At project closeout, submit record drawings of installed metal ductwork products, in accordance with requirements of Section 013000.

C. Shop drawings: Submit 1/8" = 1'0" dimensioned layouts of ductwork showing both the accurately scaled ductwork and its relation to space enclosure. Show modifications of indicated requirements, made to conform to local shop practice, and how those modifications ensure that free area, materials, rigidity are not reduced.

1.04 DELIVERY, STORAGE AND HANDLING

A. Protection: Protect shop-fabricated and factory-fabricated ductwork, accessories and purchased products from damage during shipping, storage and handling. Prevent end damage and prevent dirt and moisture from entering ducts and fittings.

B. Storage: Where possible, store ductwork inside and protect from weather. Where necessary to store outside, store above grade and enclose with waterproof wrapping.

PART 2 - PRODUCTS

2.01 DUCTWORK MATERIALS

A. Exposed ductwork material: Where ductwork is indicated to be exposed to view in occupied spaces, provide materials which are free from visual imperfections, including pitting, seam marks, roller marks, stain and discolorations, and other imperfections, including those which would impair painting.

B. Sheet metal: Except as otherwise indicated, fabricate ductwork from galvanized sheet steel complying with ASTM A 527, lock forming quality; with G90 zinc coating in accordance with ASTM A 525; and mill phosphatized for exposed locations.

2.02 MISCELLANEOUS DUCTWORK MATERIALS

A. Provide miscellaneous materials and products of types and sizes indicated and, where not otherwise indicated, provide type and size required to comply with ductwork system requirements including proper connection of ductwork and equipment.

B. Fittings: Provide radius type fittings fabricated of multiple sections with maximum 15 deg change of direction per section. Unless specifically detailed otherwise, use 45 deg laterals and 45 deg elbows for branch takeoff connections. Where 90 deg branches are indicated, provide conical type tees.

C. Duct sealant: Non-hardening, non migrating mastic or liquid elastic sealant, type applicable for fabrication/installation detail, as compounded and recommended by manufacturer specifically for sealing joints and seams in ductwork.

D. Duct cement: Non-hardening, non-migrating mastic or liquid neoprene based cement, type applicable for fabrication/installation detail, as compounded and recommended by manufacturer specifically for cementing fitting components, or longitudinal seams in ductwork.

E. Ductwork support material: Except as otherwise indicated, provide hot-dipped galvanized steel fasteners, anchors, rods, 3" wide straps, trim and angles for support or ductwork. Rods shall be minimum 1/4" diameter and straps shall be minimum 1/8" thick x 3" wide

for ducts 24" and 36" x 14" and smaller. For ducts larger provide 3/8" diameter rod and 3/16" x 3" wide straps.

1. Except where space is indicated as High Humidity area, interior support materials of not less than 1/4" diameter or 3/16" thickness may be plain (not galvanized).

2. For exposed stainless steel ductwork, provide matching stainless steel support materials.

F. Flexible ducts: Either spiral-wound spring steel with flameproof vinyl sheeting, or corrugated aluminum; complying with UL 181.

1. Where installed in unconditional spaces other than return air plenums, provide 1" thick continuous flexible fiberglass sheath with vinyl vapor barrier jacket.

G. Flexible ducts: Exterior reinforced laminated vapor barrier, 1-1/2" thick fiber glass insulation (K = .25 @ 75 degrees F), encapsulated spring steel wire helix and impervious, smooth non-perforated interior vinyl liner. Individual lengths of flexible ducts shall contain factory fabricated steel connection collars.

2.03 FABRICATION

A. Shop fabricate ductwork in 4, 8, 10 or 12 foot lengths, unless otherwise indicated required to complete runs. Preassemble work in shop to greatest extent possible, as to minimize field assembly of systems. Disassemble systems only to extent necessary for shipping and handling. Match-mark sections for reassembly and coordinated installation.

B. Shop fabricate ductwork of gages and reinforcement complying with SMACNA (HVAC Duct Construction Standards) or shop fabricate ductwork of gauges and reinforcement complying with ASHRAE Handbook, Equipment Volume, Chapter 1, Duct Construction.

C. Fabricate duct fittings to match adjoining ducts, and to comply with duct requirements as applicable to fittings. Except as otherwise indicated, fabricate elbows with center-line radius equal to associated duct width; and fabricate to include turning vanes in elbows where shorter radius is necessary. Limit angular tapers to 30 deg for contracting tapers and 20 deg for expanding tapers.

D. Fabricate ductwork with accessories installed during fabrication to the greatest extent possible.

E. Fabricate ductwork with duct liner in each section of duct (where indicated). Laminate liner to internal surfaces of duct in accordance with instructions by manufacturers of lining and adhesive, and fasten with HVAC fasteners.

2.04 FACTORY-FABRICATED LOW PRESSURE DUCTWORK

A. At Installer=s option, provide factory-fabricated duct and fittings, in lieu of shop-fabricated duct and fittings.

B. Material: Galvanized sheet steel complying with ASTM A 527, lock forming quality, with ASTM A %25, G90 zinc coating, mill phosphatized.

C. Gage: 28-gauge minimum for round and oval ducts and fittings, 4" through 24" diameter.

D. Elbows: One piece construction for 90 deg and 45 deg elbows 14" and smaller. Provide multiple gore construction for larger diameters with standing seam circumferential joint.

E. Divided flow fittings: 90 deg tees, constructed with saddle tap spot welded and bonded to duct fitting body.

F. Available manufacturers: Subject to compliance with requirements, manufacturers offering factory-fabricated ductwork which may be incorporated in the work include, but are
not limited to, the following:

1. Semco Manufacturing, Inc.
2. United Sheet Metal Division
3. United McGill Corp.

2.05 KITCHEN EXHAUST DUCTS

A. Fabricate kitchen exhaust ducts and supports, used for smoke and vapor removal for cooking equipment, of 16-ga minimum galvanized steel where concealed, and of 18-ga minimum stainless steel where exposed. For duct construction, comply with SMACNA AHVAC Duct Construction Standards@, and NFPA 96 Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment@.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examine areas and conditions under which metal ductwork is to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.02 INSTALLATION OF METAL DUCTWORK

A. Assemble and install ductwork in accordance with SMACNA Standards including duct sealer for joints and seams which will achieve air-tight (95% leakage for systems rated 3"

and under) and noiseless (no objectionable noise) systems, capable of performing each indicated service. Install each run with minimum number joints. Align ductwork accurately at connections, within 1/8" misalignment tolerance and with internal surfaces smooth. Support ducts rigidly with suitable ties, braces, hangers and anchors to type which will hold ducts true-to-shape and to prevent buckling. Support vertical ducts at every floor.

B. Field fabrication: Complete fabrication of work at project as necessary to match shop-fabricated work and accommodate installation requirements.

C. Routing: Locate ductwork runs, except as otherwise indicated, vertically and horizontally and avoid diagonal runs wherever possible. Locate runs as indicated by diagrams, details and notations or, if not otherwise indicated, run ductwork in shortest route which does not obstruct usable space or block access for servicing building and its equipment. Hold ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building. Limit clearance to 2" where furring is shown for enclosure or concealment of ducts, but allow for insulation thickness, if any. Where possible, locate insulated ductwork for 1" clearance outside of insulation. Wherever possible in finished and occupied spaces, conceal ductwork from view, by locating in HVAC shafts, hollow wall construction or above suspended ceilings. Do not erase horizontal runs in solid partitions, except as specifically shown. Coordinate layout with suspended ceiling and lighting layouts and similar finished work.

D. Electrical equipment spaces: Do not route ductwork through transformer vaults, electrical panel rooms and their electrical equipment spaces and enclosures.

E. Penetrations: Where ducts pass through interior partitions and exterior walls, and are exposed to view, conceal space between construction opening and duct or duct insulation with sheet metal flanges of same gauge as duct. Overlap opening on four sides by at least 1-1/2". Fasten to duct and substrate.

1. Where ducts pass through fire-rated or smoke-rated floors, walls, or partitions, provide fire-stopping between duct and substrate, in accordance with requirements of Division-7 Section Fire-Stopping. Provide fire dampers as required by all local, state or federal codes.

F. Coordination: Coordinate duct installations with installation of accessories, dampers, coil frames, equipment, controls and other associated work of ductwork system.

G. Installation: Install metal ductwork in accordance with SMACNA AHVAC Duct Construction Standards@ and as described on the drawings.

3.03 INSTALLATION OF FLEXIBLE DUCT

A. Maximum length: For any duct run using flexible ductwork, do not exceed (3'0") extended length.

B. Installation: Install in accordance with Section III of SMACNA=s AHVAC Duct Construction Standards, Metal and Flexible@.

C. Flexible ducts: Supported at or near mid-length with 2" wide 28 ga steel hanger collar attached to the structure with an approved duct hanger. The maximum length will be seven feet and can be used at the terminal ends only, except that flexible ducts properly installed may be used to cross seismic joints without offsets.

3.04 INSTALLATION OF KITCHEN EXHAUST DUCTS

A. Fabricate joints and seams with continuous welds for watertight construction. Provide for thermal expansion of ductwork through 2,000 deg F (1,093 deg C) temperature range. Install without dips or traps which may collect residues, except where traps have continuous or automatic residue removal. Provide access openings at each change in direction, located on sides of duct 1-1/2" minimum from bottom, and fitted with grease-tight covers of same material as duct.

3.05 EQUIPMENT CONNECTIONS

A. Connect metal ductwork to equipment as indicated, provide flexible connection for each ductwork connection to equipment mounted on vibration isolators, and/or equipment containing rotating machinery. Provide access doors as indicated or required.

3.06 ADJUSTING AND CLEANING

A. Clean ductwork internally, unit by unit as it is installed, of duct and debris. Clean external surfaces of foreign substances which might cause corrosive deterioration of metal or, where ductwork is to be painted, might interfere with painting or cause paint deterioration.

B. Strip protection paper from stainless ductwork surfaces, and repair finish wherever it has been damaged.

C. Temporary closure: At ends of ducts which are not connected to equipment of air distribution devices at time of ductwork installation, provide temporary closure of polyethylene film or other covering which will prevent entrance of duct and debris until time connections are to be completed.

D. Balancing: Refer to Section 230593 Testing, Adjusting and Balancing for air distribution balancing of metal ductwork; not work of this section. Seal any leak in ductwork that became apparent in balancing process.

END OF SECTION 23 31 13 Metal Ductwork

SECTION 26 00 00
ELECTRICAL - GENERAL PROVISIONS

PART 1 - GENERAL

1.1 GENERAL CONDITIONS

A. The general provisions of the Contract including General and Supplementary Conditions, Division 1 General Requirements, and Instructions to Bidders apply to the Work included in this Division.

1.2 WORK INCLUDED

A. Work covered by this specification shall include furnishing all labor, materials, equipment and services required to construct and install the complete electrical system shown on accompanying plans and specified herein.

B. This work shall include: the general layout of the complete electrical system; arrangement of feeders, circuits, outlets, switches, controls, panelboards, transformers, service equipment, fixtures, and other work. No rough-in or connection, etc., for Mechanical Equipment shall be done until coordination is completed with Division 23 Contractor.

C. This work shall include electrical demolition to support all other trades. See architectural, structural and mechanical plans and specifications to determine complete scope. Circuits remaining but disrupted by demolition shall be repaired as necessary to keep them operational. Electrical being removed shall be removed to the fullest extent possible as to not cause additional damage to the building. All remaining electrical panels, circuits, feeders, etc… shall be thoroughly traced in the field to determine actual loads. Provide new, updated, accurate panel schedules and nameplates based on complete field verification.

1.3 RELATED WORK

A. The Contractor shall be familiar with any work specified elsewhere in these specifications. He shall perform this work as if specified herein.

1.4 PERMITS AND INSPECTIONS

A. The Contractor shall give all necessary notices; obtain all permits, and pay all governmental taxes, fees and other costs in connection with his work; file all necessary plans; prepare all documents and obtain all necessary approvals of all governmental departments having jurisdiction; obtain required Certificates of Inspection for his work and deliver same to the Architect-Engineer before request for acceptance and final payment of work.

B. Contractor shall include in the work, without extra cost to the Owner, all labor, materials, services, apparatus, drawings, etc. necessary to comply with all laws, ordinances, rules and regulations, whether or not shown on the drawings and/or in the specifications.

1.5 CODES AND STANDARDS

A. The following specifications and standards, of issues listed below, but referred to thereafter by basic designation only, form part of these specifications:

1. National Electrical Code (NEC) NFPA-70.
2. National Fire Protection Association's Recommended Practices.
3. Local, City and State Codes and Ordinances.
4. National Electrical Safety Code.
5. Underwriters Laboratories, Inc. (UL).
6. Illuminating Engineering Society (IES).
7. Institute of Electrical and Electronic Engineers (IEEE).
8. Insulated Power Cable Engineers Association.
9. National Electrical Manufacturers Association (NEMA).
10. American National Standards Institute (ANSI).
11. American Society for Testing Materials (ASTM).
12. State Fire Prevention Code.
13. Occupational Health Safety Act (OSHA).
14. Service Requirements of serving utility company.
15. Life Safety Code - NFPA 101.
16. Americans with Disabilities Act (ADA)

The latest specifications and standards available shall be used for the above.

1.6 REVIEW OF MATERIALS

A. It is the intent of these Specifications to establish quality standards of materials and equipment installed. Therefore, specific items are identified by manufacturer, trade name or catalog designation.

B. Submit manufacturer's catalog sheets and/or shop drawings covering all phases of work included in this contract.

C. Submittals shall be arranged in sets and bound. Material shall be organized into indexed sections corresponding to specification sections. No loose sheets will be acceptable. All data shall be submitted at one time. Partial submittals will not be accepted for review.

D. All submittals shall bear written certification to the effect that the Contractor has examined them and found them to be in accordance with Specifications and to be dimensionally correct with reference to available space and to related trades. Each submittal shall be signed and dated by the Division 16 Contractor.

E. If submittals are transmitted in pdf format, they shall be submitted as separate pdf for each electrical sections. If the submittal exceeds one hundred sheets, a single hard copy shall be provided to the engineer for review and records. This hard copy will remain with the engineer.

F. Submittals are required even when equipment being furnished is exactly as specified. Each sheet of submitted data shall be thoroughly edited to clearly indicate which features and/or options are being proposed.

G. Substitution of equipment shall be in accordance with Supplementary General Conditions of this Specification.

H. Any proposed substitutions of equipment shall be accompanied by shop drawings showing revised equipment layouts and wiring diagrams. Where substituted equipment furnished requires use of larger, more, or differently arranged connections, such connections shall be installed to the complete satisfaction of Architect-Engineer without additional cost to Owner.

I. Should a substitution be accepted and subsequently proven unsatisfactory for the service intended within the warranty period, the contractor shall replace this material or equipment with that as originally specified, or corrected as directed by the Architect-Engineer.

J. Where substitutions alter the design or space requirements indicated on the drawings, the Contractor shall include all items of cost for the revised design and include cost of all allied trades involved.

K. Acceptance or rejection of the proposed substitutions shall be subject to the approval of the Architect-Engineer. If requested by the Architect-Engineer, the Division Contractor shall submit for inspection samples of both the specified and proposed substitute items.

L. In all cases where substitutions are permitted, the Contractor shall bear any extra cost of evaluating the equality of the material and the equipment to be installed.

M. The Contractor shall submit to the Architect-Engineer, detailed dimensioned shop drawings covering all items of electrical equipment. No equipment should be put into manufacture or ordered until these shop drawings or brochures have been reviewed by the Architect-Engineer.

N. In the event resubmittal is required, the Contractor shall revise the shop drawings as directed by the Architect-Engineer. The Contractor shall then resubmit the corrected shop drawings to the Architect-Engineer for final review.

O. Upon completion of the Project, this Contractor shall prepare and deliver to the Architect-Engineer 1 set of reproducible "RECORD SET" drawings, showing actual installed locations of all electrical conduits, ducts, and cables outside and inside of the buildings, including the location of all underground junction boxes, pull boxes, or handholes. Make all necessary field measurements during the installation of the electrical work.

1.7 DEVIATIONS

A. The drawings, which constitute an integral part of this contract, shall indicate the general layout of the complete electrical systems; arrangement of feeders, circuits, outlets, switches, controls, panelboards, transformers, service equipment, fixtures and other work.

B. Field verification of scale dimensions on the drawings is directed since actual locations, distances, and levels will be governed by actual field conditions.

C. The Contractor shall check Architectural, structural, plumbing, and heating and ventilating drawings to avert possible installation conflicts. Should drastic changes from original drawings be necessary to resolve such conflicts, the Contractor shall notify the Architect-Engineer and secure written approval and agreement on necessary adjustments before the installation is started.

D. The drawings may be superseded by later revised or detailed drawings or specification addenda prepared by the Architect-Engineer, and the Contractor shall conform to all reasonable changes without extra cost to the Owner. All items not specifically mentioned in the specifications or noted on the drawings, but which are obviously or normally necessary to make a complete working installation, shall be included.

1.8 SITE UTILITIES

A. Locations and elevations of various utilities, included within the scope of this work, have been obtained from existing plans and/or other substantially reliable sources, and are offered as a general guide only without guarantee as to accuracy. This Contractor shall examine the Site and verify to his own satisfaction the locations and elevations of all utilities and shall adequately inform himself of their relations to the work before entering into contract.

B. Voltage that appears on the drawings and elsewhere in these Specifications has been obtained from the serving utility company. Before ordering equipment and starting the job, this Contractor shall verify the voltage with the utility company. If voltage differs from that noted on the drawings and in the specifications, the

Architect-Engineer shall be notified at once. If the Architect-Engineer is not notified before equipment is ordered or construction is started, this contractor shall provide an acceptable and operable system at no additional cost to the Owner.

C. Exterior utilities shall include all conduit and appurtenances outside of the building or as shown on the drawings. Unless otherwise noted, utilities shall include complete tie-in with utility lines at no extra cost to the Owner. The Contractor shall pay all costs required by utility company pertaining to construction and tie-in including any required utility extensions. Any deposits required for permanent service will be paid by the Owner.

PART 2 - PRODUCTS

2.1 All material and equipment shall be new and of the best quality normally used in good commercial practice, being products of reputable manufacture.

PART 3 - EXECUTION

3.1 The Owner shall retain the right to reject any materials and/or workmanship which is not in accordance with those specified, either before or after installation.

END OF SECTION

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SECTION 26 05 00
COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 GENERAL CONDITIONS

A. The general provisions of the Contract including General and Supplementary Conditions, Division 1 General Requirements, and Instructions to Bidders apply to the Work included in this Division.

1.2 LOCAL CONDITIONS

A. Unless otherwise required or specified under another section of these Specifications, cutting and patching will be performed by the General Contractor. This Contractor shall furnish sketches showing locations and sizes of all openings, chases, etc., required for the installation of his work.

B. This Contractor shall furnish and locate sleeves and inserts required before floors and walls are built or he shall be responsible for the cost of cutting and patching required where such sleeves and inserts are not installed or where incorrectly located. This Contractor shall do all drilling required for installation of his hangers.

C. Any and all penetrations of fire and/or smoke rated walls, partitions, floors, and/or ceilings shall be accomplished in such a manner as to maintain the integrity of the fire rating and to meet U.L. requirements. Any and all such penetrations shall be done in a manner acceptable to the local fire officials. Any and all penetrations shall be sealed with a material such as Dow Corning Fire Stop 2000 or other material as may be directed by the local fire official. Penetrations of four-hour rated walls, partitions, ceilings, and/or floors will not be permitted under any circumstances**.** Contractor shall carefully plan work in advance. Refer to architectural drawings for locations and ratings of various building elements.

D. No cutting shall be permitted to any of the structural members without the written permission of the Architect-Engineer.

E. Where openings are cut to permit installation of work, or cut to repair or remodel, any defects that may appear up to expiration of guarantee, patching shall be done by the trade whose work is disturbed, but shall be paid for by the Contractor cutting openings or causing the damage.

F. The General Contractor shall furnish all foundations and supports required for electrical equipment. The Electrical Contractor shall furnish an approved layout of bases and supports to the General Contractor.

G. In general, all floor mounted equipment shall be installed on raised concrete bases. Concrete bases shall be not less than 6" high unless otherwise noted, and shall be poured in forms built of new dressed lumber. Foundation corners shall be neatly

chamfered by means of sheet metal or triangular wood strips nailed to the form. Foundation bolts shall be placed in forms when concrete is poured; bolts shall be correctly located by means of templates. Allow 1" below equipment bases for alignment and grouting. After grouting, the forms shall be removed and the surface of the foundations shall be hand rubbed with carborundum.

H. The Electrical Contractor shall give full cooperation to other trades, furnishing, in writing, to the Architect-Engineer, any information necessary to permit work of all trades to be installed satisfactorily and with the least possible interference or delay.

I. Where work of this Contractor will be installed close to work of other trades, or where there is evidence that work of this Contractor will interfere with work of other trades, this Contractor shall assist in working out space conditions to make satisfactory adjustment. If a Contractor installs his work before coordinating with other trades, he shall make necessary changes in his work to correct the condition without extra charge.

J. This Contractor shall keep his work area clean at all times. All scraps and debris shall be removed from work area. If this Contractor does not maintain his area, the General Contractor shall clean this area and back-charge this Contractor.

K. It shall be the responsibility of each bidder to visit the project site to acquaint himself with existing conditions prior to submitting a bid.

PART 2 - PRODUCTS

2.1 GENERAL

A. Each item of equipment furnished under these Specifications is to be essentially the standard product of the manufacturer; however, component parts of equipment need not be products of one manufacturer.

B. All material and equipment shall be new and of the best quality normally used in good commercial practice, being products of reputable manufacture. Each major component shall bear a nameplate stating name and address of the manufacturer and catalog number or designation. All materials shall be of the manufacturer's latest design standard, and bear Underwriters Laboratories, Inc. Label and the manufacturer's trademark.

C. Where items of equipment and/or apparatus come under the following general headings, all of the equipment shall be from the same manufacturer:

Circuit breakers, panelboards, safety switches, switchgear.

PART 3 - EXECUTION

3.1 GENERAL

A. This Contractor shall provide copies of prefunctional, start-up checklists on all equipment installed under division 16 (ie. Panelboards, transformers, feeders, grounding, etc…) to the commissioning team for its information and reference prior to the start of any fieldwork or operation of that piece of equipment.

B. All electrical construction work shall be installed under the direction of a competent supervisor who will be at the job site at all times when electrical installations are being made.

C. Installing Contractor will be held responsible for damage to other work resulting from negligence of his workmen. Such repairs shall be performed by the trade originally accomplishing the work but at the expense of this Contractor.

D. This Contractor shall utilize only competent and skillful workmen in handling and installing equipment specified.

E. Installation shall be carried out in such a manner that the many components will function as a complete workable system including any accessories required to accomplish such installation. Equipment shall be left properly adjusted and in satisfactory working order. Work is to be executed in conformity with best acceptable standard practices with the equipment being installed to allow for maximum accessibility and best appearance. Installation shall be such that future installations and expansion can be made with a minimum of expenditure.

F. Where possible, work must be scheduled for accomplishment during periods acceptable to the Owner, but when such scheduling is not feasible, work shall be executed at night or over week ends. No additional compensation will be allowed for overtime.

G. Apparatus which is too large to permit access through stairways, doorways, or shafts shall be brought to the job site by the contractor involved and put in place before the closing of the structure.

H. The Electrical Contractor shall be responsible for the protection of electrical apparatus from damage and the elements. This shall include the erection of temporary shelters, cribbing, and the covering of apparatus in incompleted areas of buildings with tarpaulins. Failure to comply with the foregoing by the contractor to the satisfaction of the Architect-Engineer will be sufficient cause for rejection of the piece of apparatus in question.

I. Chases, recesses, and other openings required for the location of conduits or equipment in new construction shall be provided by the General Contractor. This Contractor shall advise the General Contractor of the size and locations, and furnish all necessary drawings required for his work in sufficient time to allow for provision of chase.

J. After installation is complete, and at such time as the Architect-Engineer may direct, this Contractor shall conduct an operating test for approval. Equipment shall be demonstrated to operate in accordance with the requirements of this Specification. Test shall be performed in the presence of the Architect-Engineer or authorized representative. This Contractor shall furnish instruments and personnel required for the test and Owner will furnish necessary electrical power.

K. Perform an insulation test on each feeder utilizing a 500V 'Meggar' tester. The test shall be performed with the feeder open at both ends. The test shall be performed for each phase to ground including neutral and each phase to phase. Record these values and supply to the Engineer for approval and include in the operation and maintenance manual.

L. The Contractor shall furnish a written certificate guaranteeing materials, equipment, and labor furnished to be free of defects for a period of 1 year, except where otherwise indicated, from and after the date of final acceptance of the work by the Owner, and further agrees that if defects appear within stipulated guaranty period same shall be replaced or made good without charge. (Exception: Lighting fixture lamps.)

3.2 OPERATING AND MAINTENANCE MANUALS

A. Within three(3) weeks of final submittal approval, deliver to the Architect, for the Commissioning Team's use, three (3) preliminary operating and maintenance manuals covering all equipment and systems installed by this Division. This preliminary operating and maintenance manual shall be in final format and shall be as complete as possible.

B. Deliver to the Architect, for the Owner's use, three (3) complete final operating and maintenance manuals covering all equipment and systems installed by this Division. These shall be delivered at final closeout.

C. Include parts lists, wiring diagrams, test resuts, and operating instructions for all operating equipment as well as approved submittals.

D. Brochures shall be bound in hard back three ring binder and tab indexed. Label front cover and back spline indicating project name. Include page showing date and local responsible vendors with addresses and telephone numbers for furnishing parts and equipment information.

3.3 TEST AND INSPECTION REPORTS

A. Provide typewritten reports to Owner's representative indicating time, personnel involved and other pertinent data for testing of fire alarm system and other special systems.

B. Provide copies of all test or inspection reports by public agencies for electrical system.

3.4 Where installations are to be made "in accordance with manufacturer's recommendations", it shall be the responsibility of this Contractor to obtain, and maintain on file at the project site, a copy of said recommendations.

3.5 The Project Manual and project drawings are to be used together to describe the project. Any item contained in either shall be considered as being contained in both. In the event of discrepancies or conflicts, this contractor shall immediately notify the Architect-Engineer, in writing.

3.6 PAINTING:

A. Provide a prime coat of paint for all supports, hangers, frames and other materials not having a factory-applied finish.

B. Where factory-applied finishes become scratched or chipped, repair surfaces utilizing "touch up" materials obtained from the manufacturer.

3.7 Mounting heights indicated on the drawings are the centerline height of the outlet or device above the finished floor. Where outlets are indicated to be installed above counter tops, coordinate with millwork drawings to ensure that there will be no conflicts with coverplates and back splashes.

3.8 EXCAVATION AND BACKFILL

A. Provide all trenching and backfill as required for the placement of work required under this Division.

3.9 DEMOLITION

A. Remove existing panelboards and/or other devices that are not to be reused and all exposed conduit and surface mounted boxes. Where conduit is concealed and boxes are flush in walls or ceilings, remove devices and conductors and provide blank covers on boxes.

B. Remove all electrical connections to all HVAC equipment which is to be removed or relocated.

C. Where existing lighting fixtures, receptacles, switches, etc., are removed, remove all associated conductors. Remove all associated conduit, outlet boxes, etc., insofar as practical without causing damage to the building. Provide blank covers on all outlet boxes, junction boxes, etc., which cannot be removed. Repair existing circuitry as required to provide continuity to all remaining outlets.

D. Provide new directory in each panelboard to reflect actual loads served at the completion of construction/renovation.

E. Provide electrical demolition as required to support architectural and mechanical demolition.

3.10 MAINTENANCE LOGS

A. The Contractor shall maintain an appropriate maintenance log, where applicable, of all interim maintenance performed on all started-up equipment so that the manufacturer's warranties are not voided prior to the equipment being turned over to the Owner. This log shall be submitted to the Owner when the equipment is officially released to the Owner.

END OF SECTION

SECTION 26 05 19
ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 All wire and cable for feeder circuits shall conform to the latest requirements of the current edition of the NEC and shall meet all ASTM Specifications. Wire and cable shall be new manufacture; shall have size, grade of insulation, voltage and manufacturer's name permanently marked on outer covering at regular intervals; shall be delivered in complete coils or reels with identifying size and insulation tags.

1.2 Wire and cable shall be suitably protected from weather and damage during storage and handling and shall be in first- class condition when installed. Conductors shall be soft-drawn copper with insulation and outer covering as noted. Conductor sizes shall be Standard American Wire Gage sizes.

PART 2 - PRODUCTS

2.1 Insulation on low voltage conductors shall be Type THW or THWN. All 600-volt conductors in conduits or other raceways where encased in concrete on grade, where installed below grade, or where exposed to moisture, shall have moisture- resistant type insulation. Lighting and receptacle branch circuit conductors shall be Type THHN/THWN.

2.2 Conductors No. 8 and larger shall be stranded. Minimum conductor size shall be No. 12 AWG unless otherwise indicated. Conductors terminating at vibrating or moving equipment shall be stranded, regardless of size.

2.3 Where taps and splices are necessary and approved, they shall be made in approved splice boxes, wireways, manholes, etc. with suitable connectors as recommended by wire and cable manufacturer.

2.4 Where conductors are to be connected to metallic surfaces, the coated surfaces of the metal shall be polished before installing the connector. Lacquer coating of conduits shall be removed where ground clamps are to be installed.

2.5 Wire and cable shall be factory color-coded by integral pigmentation, with a separate color for each conductor and neutral conductor. The color code indicated shall be used consistently throughout the Electrical System installation, unless specified to the contrary in another section of these Specifications for that system. Color coding for #8 and larger conductors may be by means of colored tape, applied in overlapping layers to each conductor at each outlet, cabinet, junction, or termination. Tape shall cover at least 6 inches of the conductor and shall not loosen or change color with age.

2.6 COLOR CODE

A. Color code for lighting and power conductors shall be as per common practice.

A. Signal, fire alarm, intercommunication, control system and any other such system wiring shall be appropriately color coded to facilitate checking and circuit identification.

B. Where isolated grounds are specified they shall be green with yellow tracers to prevent confusion with normal equipment grounds.

2.7 Wire and cable shall be manufactured by Southwire Company, Essex Group, American Insulated Wire or approved equal.

PART 3 - EXECUTION

3.1 All conductors shall be installed in conduit unless otherwise noted. No conductors or cables shall be installed in conduits, ducts, or raceways until the raceway system has been completed. When installing conductors, the Electrical Contractor shall exercise due care to prevent damage to conductor or insulation. Only approved cable lubricants shall be used when necessary. All feeder cables including neutral and ground shall be continuous from origin to panel or equipment termination without running splices in intermediate pull or splice boxes. Unless otherwise noted, each conduit raceway shall contain only those conductors constituting a single feeder circuit or branch circuits as shown on the drawings. Do not combine "home-runs".

3.2 Minimum conductor size for power and lighting circuits shall be #12 awg. For circuits longer than 100 feet, conductor size shall be increased one size for each 75 feet or fraction thereof. When the conductor size has been increased for voltage drop, the conductor size may be dropped back down for the final connections to individual devices. These taps shall not exceed 20 feet in length.

3.3 The Electrical Contractor shall furnish and install all hangers, racks, cable cleats and supports required to make a neat and substantial cable installation.

END OF SECTION

SECTION 26 05 26
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 The entire Electrical System and Building Structure shall be grounded. The following items of equipment, appurtenances, and as required by Article 250 of the NEC, shall be grounded:

A. Electric Service, Equipment and Enclosures.
B. Conduits and Raceways.
C. Neutral and Ground Conductors.
D. Switches, Breakers, Panels.
E. Motor Frames, Controller Cabinets, Lighting Fixtures, and building structure.

1.2 RELATED WORK:

A. Section 260000: Electrical - General Provisions.
B. Section 260519: Wires and Cables.

1.3 CODE AND STANDARD COMPLIANCE:

A. NEC: Article 250.
B. UL: Standards 467 and 869.
C. IEEE: Standards 142 and 241.

PART 2 - PRODUCTS

2.1 All products shall comply with NEC, UL and IEEE as applicable.

2.2 All grounding conductors shall be copper.

PART 3 - EXECUTION

3.1 Bonding jumpers to maintain ground continuity at raceway and pull box expansion joints shall be stranded cable or copper braid sized in accordance with Article 250 of the NEC and installed with approved ground fittings.

3.2 Grounding jumpers shall be installed across all water meters. Jumpers shall be stranded bare copper cable or copper bus attached by means of exothermic welds to the water pipe.

3.3 Grounding Connectors: Use exothermic welds at all rods and terminations below grade; bolted pressure connectors shall be used above grade unless noted otherwise.

3.4 All connections and terminations below grade shall be left exposed until such time as they have been inspected and approved by the Architect-Engineer.

3.5 After grounding system has been completely installed, and before any equipment is placed in operation, the Electrical Contractor shall perform a test of the network. This shall be a three point fall of potential test. The resistance between ground and absolute earth shall not exceed 25.0 Ohms. Provide additional ground rods, as necessary until the resistance requirements are achieved.

3.6 All reinforcement steel in the building's concrete slabs shall be bonded to the building steel using #6 bare Cu ground wire and exothermic welds.

3.7 System grounding conductors shall be sized in accordance with NEC Table 250-66. Equipment grounding conductors shall be sized in accordance with NEC Table 250-122.

3.8 Provide separate green ground conductor in each feeder and each equipment branch circuit. The conduit system shall never be utilized as the sole equipment ground.

3.9 Provide separate green grounding conductor in each panelboard feeder.

3.10 Provide separate internal green grounding conductor in each flexible conduit used for motor connection.

3.11 Where isolated grounds are required, they shall be in accordance with the requirements of NEC.

END OF SECTION

SECTION 26 05 33
RACEWAYS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 Minimum size conduit shall be 1/2". Other sizes shall be as indicated on the plans, or as required by the NEC for number and size of conductors installed.

1.2 All conduit shall be of standard sizes and each length shall bear Underwriters Laboratories Label and manufacturer's trade mark.

PART 2 - PRODUCTS

2.1 Rigid steel conduit shall be National Electric Products Company, or approved equal; galvanized mild steel, specially selected with reference to uniformity of thickness and freedom from defects. Fittings shall be zinc-coated, threaded type.

2.2 Electrical metallic tubing raceways, where permitted, shall be U.L. Listed and as manufactured by Jones & Laughlin Conduit Products or approved equal.

2.3 Rigid Polyvinyl Chloride Conduit (PVC) shall be Type 40, heavy wall or Type 80 extra heavy wall as manufactured by Carlon Products or approved equal.

2.4 Flexible steel conduit shall be used to connect all motors and other moving electrical equipment. Liquid-tight flexible steel conduit, type U.A. as manufactured by Anaconda or approved equal, shall be used in damp locations where flexible conduit is required.

PART 3 – EXECUTION

3.1 Conduit run in finished areas of building shall be concealed in floor, wall, ceiling, above or behind furring, or as noted on the drawings. Contractor shall avail himself of Architectural and Structural drawings for information relating to slab thickness, reinforcing, finish lines, chases, furrings, ceiling construction and finishes, and shall be guided accordingly in installation of his work. In unfinished areas, conduit is to be run concealed where construction permits; otherwise, it may be run exposed. Exercise particular care in routing and grouping exposed conduit to present neat and workmanlike appearance with all lines running parallel with or perpendicular to building lines, giving due attention to ducts, pipe and other interferences. Exercise extreme care in laying out electrical work to insure that ceiling outlets are located symmetrically within areas and with respect to air conditioning, heating and ventilating outlets, tile patterns, finishes, etc. Any errors shall be corrected at no additional cost to the Owner.

3.2 All field bends shall be made with standard tools and equipment manufactured especially for this purpose. Field-cut threads shall be protected with zinc-rich paint prior to installation.

3.3 Where embedded conduits cross building expansion joints, the Contractor shall furnish and install an offset expansion joint or a sliding expansion joint. Sliding expansion joints shall be provided with bonding strap and clamp. Where conduits are exposed, provide expansion fittings or flexible conduit as required.

3.4 Flexible conduit shall be used for connection on all motor terminal boxes to conduit stubs or outlets.

3.5 Flexible conduit shall be used for connection of control equipment requiring piping, such as solenoid valves, pressure controls, etc.

3.6 Where lighting fixtures require flexible conduit connections to junction boxes, use "greenfield," maximum length shall be 6 feet. Provide conduit supports to maintain a neat installation with no conduit supported by or resting on the ceiling system.

3.7 Where conduits are run individually, they shall be supported by straps or by using 1/4" galvanized rods or No. 8 galvanized wire with clips equal to Caddy "Kon Clips". The hangers shall be secured by means of toggle bolts on hollow masonry; expansion shields and machine screws or standard preset inserts on concrete or solid masonry; machine screws or bolts on metal surfaces; and wood screws on wood construction. The use of perforated strap or steel tie-wire will not be permitted. One hole strap may be utilized on conduits sized 1-inch and smaller. Two hole straps shall be used on larger conduits.

3.8 Where multiple conduits are run horizontally at the same elevation and grade, they may be supported on trapezes or channels suspended on rods. Trapeze members, including suspension rods, shall be properly sized for number, size and loaded weight of conduits to be supported.

3.9 Lay out and install conduit runs to avoid proximity to hot water piping. In no case run conduit within 3" of such piping.

3.10 Conduits entering panelboards, pull boxes, support boxes or outlet boxes shall be secured in place by galvanized steel lock-nuts and bushing.

3.11 Conduit joints shall be made tight with approved couplings; turns and offsets made with long sweep ells or bends. Ends of conduit are to be cut square, reamed and brought butt-to-butt in couplings.

3.12 Bends in conduit shall be made with an approved bending device and conduit bends or off-sets in which conduit is crushed, deformed or otherwise injured is not to be installed. Field bends and offsets shall be uniform and symmetrical. Install factory elbows on 2" and above conduit.

3.13 Conduit not embedded in concrete, all vertical risers, etc. shall be firmly secured by means of approved pipe clamps, hangers, etc. Run conduit without sags and pockets and in general drain or pitch toward boxes. Where conduit crosses building expansion joints, provide expansion fittings and approved ground jumper.

3.14 Where conduits are supported under exposed steel beams or bar joists, approved type beam clamps and/or clamp/hangers shall be used.

3.15 Conduit system(s) shall be electrically and mechanically continuous. Conduit system shall be bonded throughout.

3.16 All hangers shall be so located as to properly grade and support horizontal conduits without appreciable sagging of these lines. (See Articles 346 and 348, NEC). All conduit shall be of standard size and each length shall bear Underwriters Laboratories Label and manufacturer's trademark.

3.17 Where lines of different Contractors are racked on same supporting structures, each Contractor shall cooperate with the other trades involved to properly locate supporting members, and shall furnish a proportionate share of labor and materials involved in same installation; also shall cooperate with other trades so that the same type hanger is used throughout.

3.18 Conduit shall be kept corked and dry during construction and shall be swabbed out before wires are pulled into conduit.

3.19 Rigid PVC may be used for the following applications:

A. Outdoors and underground for:

1. Electrical Primary Service
2. Electrical Secondary Service
3. Telephone Service Entrance
4. Electrical Branch Circuits

B. Under Slab on Grade: PVC conduits may be run under, but not embedded in, slab on grade. Each conduit shall transition to rigid steel ells before turning vertically up through grade or slab. Exposed PVC conduit emerging from floors or will not be permitted.

C. All joints shall be made watertight using fittings and other materials as recommended by the conduit manufacturer.

3.20 Empty Conduit Systems

A. Where empty conduit systems are indicated, provide all raceways, junction boxes, outlet boxes, and appurtenant devices as indicated or as required for a complete system.

A. Identify raceways above furred ceilings and in unfinished spaces every 20 feet.

B. In each "empty" conduit, provide a 9-gauge galvanized pull wire. Leave 12 inches slack wire at each end.

C. All empty conduit shall be covered at each end to prevent the entry of dirt and debris.

3.21 Conduits below grade shall be installed a minimum of 24 inches below finished grade.

3.22 EMT shall be used for all interior feeders & branch circuits except where noted otherwise. MC Cable may be used for interior branch circuits per detail on drawing.

3.23 Rigid steel conduit shall be used for exposed exterior installations or where subject to physical damage. Turn-ups shall be made with GRS elbows, U.O.N.

END OF SECTION

SECTION 26 05 34
PULL BOXES & JUNCTION BOXES

PART 1 - GENERAL

1.1 Furnish and install pull boxes where necessary in the raceway system to facilitate conductor installation.

1.2 Where indicated on the plans and where necessary to terminate, tap-off or redirect multiple conduit runs, the Electrical Contractor shall furnish and install appropriately designed junction boxes.

1.3 All boxes shall be made of galvanized steel, or as specified, of metal gage and physical size as required by the NEC for the number and size of conduits and conductors involved. Boxes shall have removable screw covers for flush or surface installation as indicated on the plans. Boxes shall be securely mounted to the building structure with supporting facilities independent of the conduits entering or leaving the boxes.

PART 2 - PRODUCTS

2.1 Pull boxes and junction boxes shall be manufactured by Steelcity, Appleton, Raco or approved equal.

PART 3 - EXECUTION

3.1 In general, conduit runs of more than 100'-0", or with more than 3 right-angle bends, shall have a pull box installed at a convenient intermediate location.

END OF SECTION

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SECTION 26 05 35
OUTLET BOXES

PART 1 - GENERAL

1.1 All outlet boxes shall be standard galvanized steel type, at least 1-1/2" deep, single or gang style type of size to accommodate devices noted. Outlet boxes shall be equipped with plaster ring or cover as necessary.

1.2 The Electrical Contractor shall study all plans relative to the spaces surrounding each outlet in order that his work may fit the work of Others; and, that when fixture outlets or controls are installed, they will be symmetrically located and best-suited for each condition. Outlet boxes located in the concrete, damp places or exposed to the weather shall be of the cast-metal type having threaded hubs. Each outlet box shall have sufficient volume to accommodate the number of conductors entering the box in accordance with the requirements of the National Electrical Code. Outlet boxes shall be not less than 1-1/2" deep, unless shallower boxes are required by structural conditions and are specifically approved by the Architect-Engineer. Ceiling and bracket outlet boxes shall not be less than 4" octagonal except that smaller boxes may be used where required by the particular fixture to be installed. All ceiling and bracket outlets, where required, shall be equipped with a 3/8" fixture stud, installed through the back of the box and not dependent on its mounting bolts for its support. The fixture stud shall be securely fastened to the box to prevent turning. Boxes shall be rigidly supported from a structural member of the building, either directly or by using a metal or wood brace per Article 370 of the NEC.

1.3 Switch and receptacle boxes shall be approximately 2" x 3".

1.4 Switch boxes shall be 1, 2, 3, etc. gangs as required. Sectional switch boxes shall not be used. Outlet boxes for special equipment such as electrical thermostat controls and signal circuits, clocks, etc. shall be suitable for the equipment and service intended, but shall be not less than 4" square and 2" deep. Suitable covers designed for the equipment served shall be provided.

PART 2 - PRODUCTS

2.1 Outlet boxes for telephone and signaling systems shall be of the utility type.

2.2 Concealed or flush mounted outlet boxes shall be zinc-coated or cadmium plated sheet steel suitable for the conditions of each outlet; "Raco" or approved equal.

2.3 Boxes located outdoors shall be cast type, as manufactured by Appleton, Crouse-Hinds, or approved equal.

2.4 Outlet boxes shall be manufactured by Steelcity, Appleton, Raco or approved equal.

PART 3 - EXECUTION

3.1 Boxes installed in concealed locations shall be set flush with the finish surfaces and shall be provided with the proper type extension rings or plaster covers where required. Outlets in plaster walls shall be equipped with plaster rings except as otherwise noted or specified. Boxes shall be installed in a rigid and satisfactory manner and shall be fastened directly with wood screws on wood; bolts and expansion shields on concrete or brick; toggle bolts on hollow masonry units; and, machine screws or welded threaded studs on steel work.

3.2 Device plates as specified, or noted elsewhere, shall be provided for each outlet to suit the device installed. Plates shall be installed with all 4 edges in continuous contact with finished wall surfaces without the use of mats or similar devices. Plates shall be installed vertically with an alignment tolerance of 1/16". The use of sectional device plates will not be permitted.

3.3 Wall switch outlets shall be 48" above finished floor unless otherwise indicated. When located near doors, they shall be installed on the lock side of the door; unless otherwise noted.

3.4 Clock outlet boxes shall be installed 7'-6" above the finished floor unless otherwise indicated, or a height to meet Architectural conditions.

3.5 Telephone and convenience receptacle wall outlet boxes shall be set flush 18" above finished floor unless otherwise noted.

3.6 Outlet boxes shall be installed at the approximate locations shown on the drawings, or within 2'-0" of the location as directed by the Architect-Engineer.

3.7 Box heights may be adjusted, if required, to coordinate with exposed block or brick coursing.

3.8 Outlet boxes for devices located on opposite sides of one-hour and two-hour walls shall be separated by a minimum horizontal distance of 24 inches.

3.9 Where outlet boxes are flush-mounted in rated walls, clearance between wallboard facing and box shall not exceed 1/8", per U.L. requirements.

END OF SECTION

SECTION 26 05 53
IDENTIFICATION FOR ELECTRICAL EQUIPMENT

PART 1 - GENERAL

1.1 NAMEPLATES

A. The following items shall be equipped with nameplates:

1. All motor starters, motor control centers, pushbutton stations, control panels, time switches.

2. Disconnect switches, fused and unfused, switchboards and panelboards, circuit breakers, contactors or relays in separate enclosures.

3. Special electrical systems shall be properly identified at junction and pull boxes, terminal cabinets and equipment racks.

4. Emergency power system components, enclosures, boxes and panelboards.

B. INSCRIPTION

1. Nameplates shall adequately describe the function or use of the particular equipment involved. Where nameplates are detailed on the drawings, inscription and size of letters shall be as shown. Nameplates for panelboards and switchboards shall include the panel designation, voltage and phase of the supply.

2. For example, "Panel A, 120/208 v, 3-phase, 4 wire". The name of the machine on the motor nameplates for a particular machine shall be the same as the one used on all motor starters, disconnects and PB station nameplates for that machine.

PART 2 - PRODUCTS

2.1 NAMEPLATES

A. Nameplates shall be laminated Phenolic plastic, BLACK front-and-back with WHITE core, with lettering etched through the outer covering.

B. Nameplates for emergency power system identification shall be as above, except shall be RED in color.

PART 3 - EXECUTION

3.1 IDENTIFICATION

A. At all locations, lettering shall be 1/4" high, unless otherwise indicated on the drawings. Nameplates shall be securely fastened to the equipment with No. 4 Phillips', round-head, cadmium plated, steel self-tapping screws. Adhesives will not be accepted.

B. Warning Signs shall be furnished and installed in accordance with the following:

1. On nonload break disconnects and cutouts, the signs shall read, "DO NOT OPEN UNDER LOAD". Letters shall be 1" high, minimum.

2. Warning signs shall be of standard manufacture, fabricated of No. 18 gage steel, or heavier, with a porcelain enamel finish. Letters shall be RED on WHITE background.

3.2 Junction box covers shall be identified in accordance with system served, eg. "FA" for Fire Alarm, "IC" for Intercom, etc. In addition, all junction boxes for fire alarm system shall be painted RED. For junction boxes only, identification may be provided utilizing indelible markers, provided marking is neat and legible.

END OF SECTION

SECTION 26 24 14
PANELBOARDS

PART 1 - GENERAL

1.1 Panelboards shall be of the dead-front safety type equipped with circuit breakers and shall be of the type shown on the drawings. Panelboards shall be equipped with the type, size and number of branch circuit breakers arranged and numbered as shown on the drawings. Where main circuit breaker is shown, it shall be of the type and size indicated. Panelboards shall be enclosed in code-gage steel cabinet complete with door, door cylinder lock, circuit identification, directory holder, neutral bar, ground bus and lugs for all cable connections. All locks shall be keyed alike. Where "SPACE" is indicated, mounting hardware shall be provided and space shall be bussed for future breakers. Panel fronts shall be provided with removable 1-pole fillers in spaces. Branch connectors, mounting brackets and other hardware shall be provided for future breakers as indicated on the drawings. Circuit-breaker units shall be mounted on channel iron or formed-steel mounting backs, drilled and tapped so that units of same frame size and number of poles may be interchanged and removed from the front without disturbing the adjacent units. Panels shall be bussed according to the requirements shown on the drawings, and shall have lugs equipped with approved connectors for the size of conductor feeding the panel. Double lugs shall be provided for handling double feeder conductors. All lugs shall be solderless type. Each circuit shall be permanently numbered. Each panel shall have a typewritten directory mounted under a transparent protective cover, set in a metal frame on the inside of the cabinet door.

1.2 All panelboards shall be suitably rated for the available fault currents on this project.

1.3 Panelboards shall be listed for use as service entrance equipment, where required.

1.4 Provide HACR breakers where indicated or where required by the NEC or the manufacturer of the equipment served.

PART 2 - PRODUCTS

2.1 All panelboards shall have name plates as described in SECTION 260553.

2.2 All bus bars, including ground bar, shall be tinned copper, 98% conductivity.

2.3 All panelboards shall be standard units as manufactured by Square "D" Company. Equal units as manufactured by Siemens, GE or Cutler Hammer will be considered.

PART 3 - EXECUTION

3.1 The panelboard directory shall contain the following information:

A. Panel designation and voltage.

B. Distribution panel from which it is fed.

C. For each circuit breaker, complete information concerning the outlet controlled, including the room number or area designated on the plans.

3.2 Panelboards shall be installed with top device 5'-6" above finished floor unless otherwise indicated.

3.3 Where ceiling space exists, recessed panelboards shall have spare conduits stubbed above ceiling. Install one 3/4" conduit for each 2 spare breakers and/or blank spaces.

3.4 Panelboard nameplates shall be mounted on exterior trim so as to remain visible with panelboard door closed.

END OF SECTION

SECTION 26 27 26
WIRING DEVICES

PART 1 - GENERAL

1.1 Unless otherwise specified elsewhere or shown on the drawings, all switches shall be quiet type, rated 120-277 v AC as specified. Lock-type switches shall be of comparable grade, complete with 1 key for each switch. Switches shall be loaded to not more than 80% of their rating.

1.2 Where shown near doors, wall switches shall be mounted not less than 2" and not more than 12" from trim. Switches shall be installed near "strike" side of door.

1.3 Unless otherwise specified or indicated, all standard duplex receptacles shall be 20 ampere, 120-volt and shall be installed with ground pole at top.

PART 2 - PRODUCTS

2.1 DEVICES:

A. Wiring devices shall be specification grade as manufactured by Hubbell, Arrow-Hart, or Leviton. Device color shall be chosen by Architect

B. Wall switches shall be equal to the following:

TYPE	HUBBELL NO.
SPST (Single Pole)	CS-1221
DPST (Double Pole)	CS-1222
SPDT (Three-Way)	CS-1223
DPDT (Four-Way)	CS-1224

C. Unless otherwise indicated, receptacles shall be equal to:

TYPE	HUBBELL NO.
Single, 20 Amp	CR-5361
Duplex, 20 Amp	CR-5362
Duplex GFCI, 20 Amp	CR-GF-5362
Duplex ISOL. GND., 20 Amp	CR-IG-5362

2.2 PLATES:

A. Device plates for flush mounted devices shall be single gang or multi-gang as required to fit the boxes and devices at each location.

B. Device plates for outdoor receptacles shall be equal to those manufactured by TAYMAC or CARLON and shall be in compliance with NEC 410-57(b) for wet locations.

PART 3 - EXECUTION

3.1 Device plates shall be installed plumb, with all edges in continuous contact with the wall surface.

3.2 Receptacles installed outdoors shall be GFCI type in 4" square flush mounted box.

3.3 Outlets which must be surface mounted outdoors shall be mounted in cast boxes.

3.4 Outlets which must be surface mounted indoors shall be installed in cast boxes with coverplates appropriate for the box and the device.

3.5 Mounting heights of all devices shall be in accordance with ADA requirements.

END OF SECTION

SECTION 26 27 28
DISCONNECT SWITCHES

PART 1 - GENERAL

1.1 Disconnect switches shall be fusible or nonfusible as indicated on the plans. Switches shall be fusible whenever required by manufacturer of equipment served.

1.2 All disconnect switches shall be heavy-duty type, quick-make, quick-break or as shown on the plans. Disconnect switches for motor circuits shall be horsepower-rated.

1.3 Disconnect switches shall have a cover interlock, with defeat device, to prevent unauthorized personnel from opening the door when the switch is on.

PART 2 - PRODUCTS

2.1 All disconnect switches shall have switch blades which are fully visible in the "OFF" position when the door is open. Disconnect switches shall be of dead-front construction with permanently attached arc suppressors hinged or otherwise attached to permit easy access to line-side lugs without removal of the arc suppressor. Lugs shall be UL listed for copper and/or aluminum cables and front removable. All current-carrying parts shall be plated by electrolytic processes.

2.2 Disconnect switches shall be furnished in NEMA 1 general purpose enclosures except NEMA 3 or 3R (Raintight) shall be used in damp locations.

2.3 Enclosures shall be of code gage (UL 98) sheet steel or code gage (UL 98) galvanized steel. They shall be treated with a rust-inhibiting phosphate and finished in Gray baked enamel. Disconnect switches shall be horsepower-rated for 250 Volts AC or DC, or 600 Volts AC as required.

2.4 Fusible disconnect switches shall be equipped with a device to reject all nonclass "R" fuses. Switches shall withstand up to 200,000 amps RMS symmetrical.

2.5 All disconnect switches shall be identified with engraved laminated plastic labels as described in Section 260553.

2.6 All disconnect switches shall be Square "D". Equal units as manufactured by G.E., Cutler Hammer, or Siemens will be considered.

END OF SECTION

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SECTION 26 51 13
LIGHTING FIXTURES

PART 1 - GENERAL

1.1 The Electrical Contractor shall furnish all luminaires, lighting equipment and components shown on the plans, listed in the Fixture Schedule and specified herein. He shall furnish all labor and materials to install specified equipment in the manner indicated.

1.2 All luminaires and lighting equipment shall be delivered to the project site complete with suspension accessories, canopies, hickeys, casings, sockets, holders, reflectors, ballasts, diffusing material, louvers, plaster frames, recessing boxes, etc., all wired and assembled as indicated.

1.3 The Electrical Contractor shall furnish and install accessories and accessory wiring as specified herein.

PART 2 - PRODUCTS

2.1 Fixtures shall be UL or ETL listed.

2.2 Fixture submittals shall include estimated useful life calculated based on IES LM-70. Minimum value shall be 50,000 hours.

2.3 Fixture submittals shall include rated efficacy (LM/W) values for the color temperature, lumen output and distribution type specified.

2.4 Electronic files of photometric data in IESNA LM-63 format shall be available upon request for all fixtures at the color temperature, lumen output and distribution type specified.

2.5 All fixtures shall include integral surge protection equal to or exceeding the specified fixtures.

2.6 All fixtures shall have a five year warranty. This shall include drivers, arrays and internal controls.

2.7 All recessed fixtures shall be 100 percent serviceable from below.

2.8 Provide a sample of each fixture proposed for substitution upon request.

2.9 Only fixtures manufactured by a company specializing in manufacturing the product with a minimum of five years documented experience will be considered.

2.10 Acceptable manufacturers are Acuity, Hubbell or Eaton.

2.11 Alternate fixtures to those specified must be submitted to the Architect/Engineer a minimum of 10 days prior to bid for approval.

2.12 Alternate fixtures will be evaluated based on appearance, LM/W, distribution, performance, construction quality and manufacturer's record.

PART 3 - EXECUTION

3.1 This Contractor shall take special note of the voltage at which fixtures are to be operated.

3.2 It shall be the responsibility of the Contractor to assure his count by type as well as voltage prior to ordering. Extras will not be allowed for any errors by this Contractor.

3.3 All fixtures shall be square and level in relation to surrounding materials and space.

3.4 This contractor shall coordinate with the ceiling contractor before ordering fixtures to ensure that the fixtures ordered have the proper mounting features to be compatible with the ceiling types.

3.5 All fixtures shall be protected from general construction and shall be thoroughly cleaned prior to final inspection.

END OF SECTION

SECTION 31 31 16
TERMITE CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Chemical soil treatment.

1.02 REFERENCE STANDARDS

A. Title 7, United States Code, 136 through 136y - Federal Insecticide, Fungicide and Rodenticide Act 2006.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Indicate toxicants to be used, composition by percentage, dilution schedule, intended application rate.

C. Test Reports: Indicate regulatory agency approval reports when required.

D. Manufacturer's Certificate: Certify that toxicants meet or exceed specified requirements.

E. Certificate of compliance from authority having jurisdiction indicating approval of toxicants.

F. Manufacturer's Instructions: Indicate caution requirement.

G. Maintenance Data: Indicate re-treatment schedule .

H. Warranty: Submit warranty and ensure that forms have been completed in Owner's name.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing this type of work and:
   1. Approved by manufacturer of treatment materials.
   2. Licensed in the State in which the Project is located.

1.05 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Provide five year installer's warranty against damage to building caused by termites.
   1. Include coverage for repairs to building and to contents damaged due to building damage. Repair damage and, if required, re-treat.
   2. Inspect annually and report in writing to Owner. Provide inspection service for [_____] years from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 CHEMICAL SOIL TREATMENT

A. Toxicant Chemical: EPA Title 7, United States Code, 136 through 136y approved; synthetically color dyed to permit visual identification of treated soil.

B. Diluent: Recommended by toxicant manufacturer.

C. Mixes: Mix toxicant to manufacturer's instructions.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that soil surfaces are unfrozen, sufficiently dry to absorb toxicant, and ready to receive treatment.

B. Verify final grading is complete.

3.02 APPLICATION - CHEMICAL TREATMENT

A. Comply with requirements of U.S. EPA and applicable state and local codes.

B. Spray apply toxicant in accordance with manufacturer's instructions.

C. Apply toxicant at following locations:
   1. Under Slabs-on-Grade.
   2. At Both Sides of Foundation Surface.
   3. Soil within 10 feet of Building Perimeter for a depth per manufacturers instructions.

D. Under slabs, apply toxicant immediately prior to installation of vapor barrier.

E. At foundation walls, apply toxicant immediately prior to finish grading work outside foundations.

F. Apply extra treatment to structure penetration surfaces such as pipe or ducts, and soil penetrations such as grounding rods or posts.

G. Re-treat disturbed treated soil with same toxicant as original treatment.

H. If inspection or testing identifies the presence of termites, re-treat soil and re-test.

3.03 PROTECTION

A. Do not permit soil grading over treated work.

END OF SECTION