

# PROJECT MANUAL

VOLUME ONE

## CITY OF LOVINGTON, NEW MEXICO *FIRE STATION #2*



**Teske  
Architects**

**TESKE ARCHITECTS**

1000 North Turner,  
Hobbs, NM 88240



**WDG ARCHITECTS**

1014 South Main Street, Ste. A  
Las Cruces, NM 88005

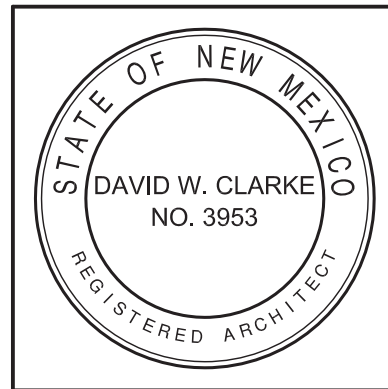
AUGUST 26, 2018



City of Lovington, New Mexico  
214 South Love Street.  
Lovington, NM 88260

*PROJECT MANUAL*  
VOLUME ONE

**CITY OF LOVINGTON, NEW MEXICO**  
**FIRE STATION # 2**



The technical material and data contained in the Specifications were prepared under the supervision and direction of the undersigned, whose seal as a Professional Architect, licensed in the State of New Mexico, is affixed above.

All questions about the meaning or intent of these documents shall be submitted only to the Architect of Record, stated above, in writing.

AUGUST 26, 2018



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Architects

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Las Cruces, NM 88005

ARCHITECT OF RECORD

7 / 5 / 2018

DATE

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## LEGAL NOTICE

### INVITATION TO BID FOR CONSTRUCTION

**BID NO.: 445-02**

The City of Lovington, New Mexico, is requested competitive sealed proposals for the construction of the Lovington Fire Station #2.

The Invitation to Bid document, project manual, and project drawings may be obtained at the following plan offices:

1. Dodge Data Analytics, 4300 Beltway Place Suite 180, Arlington, TX 76018  
Telephone: (800) 393-6342
2. CMS, 30 Technology Parkway South, Suite 100, Norcross, GA 30092 Telephone: (770) 417-4000
3. Construction Reporter, 4901 Mcleod Rd. NE STE 200A, Albuquerque, NM 87109  
Telephone: (505) 243-9793
4. Plan-IT Room, 1155 Westmorland Dr. #109, El Paso TX 79925 Telephone: (915) 781-2900
5. City of Lovington website, [www.lovington.org](http://www.lovington.org), Procurement tab, Invitation to Bid

A Pre-Proposal Conference WILL NOT BE HELD.

Offerors are required to register as Bidder by e-mailing James R. Williams at [jwilliams@lovington.org](mailto:jwilliams@lovington.org)

Proposals will be received no later than 2:00 PM (MST) on Tuesday, October 2, 2018. Sealed proposals shall be delivered to:

City of Lovington  
214 South Love Street  
Lovington, NM. 88260

It is the responsibility of the Offeror to deliver the proposal to the appointed place at the appointed date and time. Late proposals will not be accepted.

The City of Lovington reserves the right to reject any and all proposals and/or cancel this RFP in its entirety.

#### **PUBLISH DATES:**

**September 1, 2018 thru September 6, 2018**

**CITY OF LOVINGTON, NEW MEXICO**

**CONTRACT DOCUMENTS  
FOR  
FIRE STATION # 2**

**Invitation to Bid # 445-02  
NIGP Commodity Code: 90930**

**City Manager  
James R. Williams**

**Fire Chief  
Terrance Lizardo**



**Bid Submission: 2:00 p.m. (local time) on October 2, 2018**

**Offerors required to register as Bidder by e-mailing**

**James R. Williams at**

**[jwilliams@lovington.org](mailto:jwilliams@lovington.org)**

<b>PROJECT NAME</b>	<b>FIRE STATION # 2</b>
<b>BID NUMBER</b>	<b>445-02</b>

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MODIFICATIONS AND ALTERNATES
CERTIFICATE OF INSURANCE (SAMPLE)

## Instructions and Procurement Information for Bidders

### PART 1 – DEFINITIONS AND TERMS

Terms used in these Bidding Documents which are defined in the Instructions to Bidders and in the Conditions of the Contract for Construction (General, Supplementary and other Conditions) have the meanings assigned in those documents.

- A. **Addendum:** A written or graphic instrument issued prior to the opening of Bids which clarifies, corrects, or changes the Bidding Documents or Contract Documents. Plural: addenda.
- B. **Agency or Owner** means City of Lovington, New Mexico
- C. **Alternate Bid:** Amount stated in the Bid as the sum to be added to or deducted from the amount of the Base Bid, if the corresponding change in the project scope, materials, and/or methods of construction is awarded by the Owner.
- D. **Base Bid:** Amount stated in the Bid as the sum for which the Bidder offers to perform the Work, excluding Alternate Bids.
- E. **Bid:** The offer of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed in conformance with the Bidding Documents.
- F. **Bid Lot:** A major item of Work for which a separate quotation or bid is requested.
- G. **Bidder:** One who submits a Bid directly to the Owner, as distinct from a subcontractor, who submits a bid to a contractor.
- H. **Bidding Documents:** The Bidding Requirements and the Contract Documents, including drawings.
- I. **Bidding Requirements:** Notice of Invitation for Bid, Prebid Information, Instructions to Bidders, Information Available for Bidders, the Bid Form, Supplements to the Bid Form, and portions of Addenda relating to any of these.
- J. **Contractor** shall mean successful bidder
- K. **Invitation to Bid (ITB):** All documents, including those attached or incorporated by reference, utilized for soliciting sealed bids (§13-1-64 NMSA 1978).
- L. **Mandatory** - the terms “must”, “shall”, “will”, “is required”, or “are required”, identify a mandatory item or factor. Failure to meet a mandatory item or factor will result in the rejection of the bid.
- M. **Responsible Bidder** means a bidder who submits a responsive bid and who has furnished, when required, information and data to prove that his financial resources, production or service facilities, personnel, service reputation and experience are adequate to make satisfactory delivery of the services, construction or items of tangible personal property described in the invitation for bids.
- N. **Responsive Bid** means a bid which conforms in all material respects to the requirements set forth in the invitation for bids. Material respects of a bid include but are not limited to price, quality, quantity or delivery requirements.

### PART 2 – BID DATE

The City of Lovington, New Mexico, will receive sealed bids at **2:00 p.m.** (local time) on **October 2, 2018** at the City of Lovington located at 214 South Love Street, Lovington, New Mexico 88260, for Fire Station # 2. Bid Proposals must be received prior to the above time and date. The bids must be delivered prior to the appointed bid opening time. The Bid proposals must be presented in a sealed envelope with **445-02, Fire Station # 2, and bid opening date** clearly marked on the front of the envelope. Bids received after this date and time will be returned unopened.

### PART 3 – BID AND CONTRACT SCHEDULE

The Procurement Manager will make every effort to adhere to the following schedule:

Action	Responsibility	Date
Bidder Registration	Bidders	Ongoing
Questions Deadline	Bidders	September 21, 2018
Submission of Bids	Bidders	October 02, 2018 <b>2:00 PM</b>
Public Opening	City of Lovington	October 02, 2018 <b>2:30 PM</b>
City of Lovington Approval	City Commissioners	October 08, 2018
Intent to Award Contract	City and Selected Contractor	October 09, 2018
This schedule is subject to change. All offerors will be notified of schedule changes via e-mail.		

### PART 4 – PRE-BID CONFERENCE AND PLAN AVAILABILITY

**No pre-bid conference will be held. Bidders are required to register by e-mailing James R. Williams at [jwilliams@lovington.org](mailto:jwilliams@lovington.org)**

All questions or clarifications related to the Contract Documents should be directed to Joseph Fuemmeler or Ruben Contreras in writing. Email address are [josephf@wdg-architects.com](mailto:josephf@wdg-architects.com), [rubenc@wdg-architects.com](mailto:rubenc@wdg-architects.com), telephone number is 575-528-0022. Answers to questions will be made in the form of an addendum, which will be posted on City of Lovington website. An e-mail will be sent to all registered bidders when an Addendum has been issued. The deadline to submit questions or request clarifications is September 21, 2018 at 5:00pm.

The Contract Documents may be downloaded from the City of Lovington website <http://www.lovington.org> procurement tab, request for proposals

### PART 5 – BID FORM REQUIREMENTS

Bids shall be submitted on forms included with the bidding documents. All blanks shall be filled in manually by ink. Where so indicated by the makeup of the bid form, sums shall be expressed in both words and figures, and, in case of discrepancy between the two, the amount written in words shall govern. The signer of the bid must initial any interlineations, alteration, or erasure.

Bidders must be licensed as contractors in the State of New Mexico as required by State statute and must include license number in the prescribed place on the bid form. Each bid must be submitted on the prescribed form and be accompanied by a bidder's bond, payable to the City of Lovington, New Mexico, in an amount not less than five percent of the amount of the bid, as a guarantee that if awarded the contract, the bidder will promptly enter into a contract and execute such bonds as may be required. The City of Lovington will return the bond to any unsuccessful bidder within ten business days following final approval of the contract with the successful bidder.

The right to reject any and/or all bids and to waive all technicalities is reserved by the City of Lovington, New Mexico. Technical Waivers will be granted only through written documentation received from Purchasing. If a waiver is issued for a bid, it will be forwarded via addendum to all vendors who have received copies of the bid.

### PART 6 – GROSS RECEIPTS TAX

New Mexico Statutes requires that the bid amount (unit prices) exclude the applicable state gross receipts tax or applicable local option tax but that the contracting agency (owner) shall be required to pay the applicable tax including any increase in the applicable tax becoming effective after the date the contract is entered into. The applicable gross receipts tax or applicable local option tax shall be shown as a separate amount on each billing or request for payment made under the contract.

#### **PART 7 – GUARANTEE PROVISION**

The Contractor shall guarantee under a 100% Performance, Labor, and Material Payment bond, all work constructed under this contract against defective materials and workmanship for a period of one (1) year following its acceptance.

#### **PART 8 – WAGE RATES**

Bidders should note that the New Mexico Department of Labor wage rates shall be required on projects valued at more than \$60,000.

#### **PART 9 – PUBLIC WORKS MINIMUM WAGE ACT**

Public Works Minimum Wage Act Registration: (13-4-13.1 NMSA 1978) A contractor or (any tier of) subcontractors that submits a bid valued at more than \$60,000 for a Public Works project that is subject to the Public Works Minimum Wage Act shall be registered with the New Mexico Department of Workforce Solutions (DWS) Labor Enforcement Fund. Registration will be verified prior to award of contract. The form can be obtained from the Labor and Industrial Division of the Department Of Labor. Pursuant to Section 13-4-13.1 of the Procurement Code, the City or Lovington will not accept a bid on a public works project from a prime contractor that does not provide proof of required DWS registration for itself.

#### **PART 10 – SUBCONTRACTOR LISTING**

Bidders are required to provide with the bid document the name, the locations, category of work and DWS registration number provided by a subcontractor (in the amount of \$60,000 or more) that will perform labor, work, or render service in excess of \$5,000, or ½ of 1% of the Contractors bid, whichever is greater.

The name and location of only one subcontractor for each category of work shall be set forth pursuant to the Subcontractor Fair Practices Act.

No subcontractor substitutions shall be allowed from those listed in the bid documents under any condition other than those stipulated pursuant to Section 13-4-36 NMSA, 1978 (Procurement Code).

#### **PART 11 – SUBCONTRACTOR BONDING**

A subcontractor shall provide a performance and payment bond on a public works building project if the subcontractor's contract for work to be performed on a project is one hundred twenty-five thousand dollars (\$125,000) or more.

It is the responsibility of each subcontractor submitting a bid to a contractor to be prepared to submit a faithful performance and payment bond if so requested by the contractor.

In the event any subcontractor submitting a bid to a contractor does not, upon the request of the contractor and at the expense of the contractor at the established charge or premium therefore, furnish to the contractor a bond issued by a corporate surety authorized to do business in New Mexico in accordance with the New Mexico Insurance



Code [[Chapter 59A](#), NMSA 1978] and listed in the United States treasury department circular 570 wherein the contractor is named the obligee, guaranteeing prompt and faithful performance of the subcontract and the payment of all claims for labor and materials furnished or used in and about the work to be done and performed under the subcontract, the contractor may reject the bid and make a substitution of another subcontractor subject to the provisions of [Section 13-4-36](#) NMSA 1978. Such bond may be required at the expense of the subcontractor only if the contractor in his written or published request for subcontract bids:

- (1) specifies that the expense for the bond shall be borne by the subcontractor; and
- (2) clearly specifies the amount and requirements of the bond.

## **PART 12 – BRIBES, GRATUITIES AND KICK-BACKS**

Pursuant to 13-1-191 NMSA 1978, reference is hereby made to the criminal laws of New Mexico (including 30-14-1, 30-24-2, and 30-41-1 through 30-41-3 NMSA 1978), which prohibit bribes, kickbacks, and gratuities, violation of which constitutes a felony. Further, the Procurement Code (13-1-28 through 13-1-199 NMSA 1978) imposes civil and criminal penalties for its violation.

## **PART 13 – COLLUSION**

No bidder shall be interested in more than one bid. Collusion among bidders or the submission of more than one bid under different names by any firm or individual shall be cause for rejection of all bids by the colluding parties without consideration. The enclosed Non-Collusion Affidavit, must be executed along with the Bid.

## **PART 14 – APPROPRIATIONS**

The terms of the Agreement are contingent upon sufficient appropriations and allocations being made by the City of Lovington or other funding agency. If the City of Lovington or other funding agency does not make sufficient appropriations and authorization, the agreement shall, notwithstanding any other provisions of the agreement, terminate immediately upon Contractor's receipt of written notice of termination from the City of Lovington. The City of Lovington's decision as to whether sufficient appropriations are available shall be accepted by the Contractor and shall be final.

## **PART 15 – DEBARMENT & SUSPENSION**

The bidder (offeror) certifies that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency. It further agrees that by submitting this proposal that it will include this clause without modification in all lower tier transactions, solicitations, proposals, contracts, and subcontracts. Where the bidder/offeror/contractor or any lower tier participant is unable to certify to this statement, it shall attach an explanation to this solicitation/proposal. The enclosed Certificate of Debarment and Suspension must be executed along with the Bid Proposal.

## **PART 16 – EQUAL OPPORTUNITY**

The Contractor, subcontractors, and all sub-subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, or national origin. The Contractor shall take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, religion, color, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, 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 setting forth the policies of nondiscrimination. The Contractor, all subcontractors, and all sub-subcontractors shall, in all solicitation or

advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, or national origin.

#### **PART 17 – QUALIFICATIONS**

Bidders are required to fill out and include with their bid the enclosed Bidder's Statement of Qualifications. To demonstrate Bidder's qualifications to perform the work, within three days of the City of Lovington request, Bidder shall submit written evidence such as financial data, previous experience, present commitments, and such other data as may be called for.

#### **PART 18 – BID AWARD**

*The City of Lovington reserves the sole right to:*

- Determine responsible bidders and responsive bids.
- 1. Responsible bidder: A bidder who submits a Responsive Bid and who has furnished, when required, information and data to prove that his financial resources, production or service facilities, personnel, service reputation, and experience are adequate to make satisfactory delivery of the construction described in the Invitation for Bid (SS13-1-82 NMSA 1978).
- 2. Responsive Bid: A bid which conforms in all material respects to the requirements set forth in the Invitation for Bid (SS13-1-84 NMSA 1978)
- Determine and waive minor technicalities in the bid form or requirements not affecting price, quality, or quantity of itemize or services sought.
- Accept and award responsive bids to responsible bidders offering the lowest lump sum.
- Award the contract all, part, or none.
- Reject any or all bids in part or in whole.

#### **PART 19 – BRAND NAMES**

Brand names and numbers are used in these specifications as a matter of convenience to indicate quality, type, and features desired. In accordance to law, demonstrably equal equipment will be given full consideration and the bidder is invited to offer such, except where it is clearly stated that such brand names and or models are specified for the purpose of standardization. Where equipment varies from the "Specifications", the bidder shall clearly note the variances and provide adequate documentation for proof that the alternate meets or exceeds specifications. The City of Lovington will determine equal equipment and the City of Lovington's determination will be final.

#### **PART 20 - PERFORMANCE AND PAYMENT BONDS**

The successful bidder shall be required to furnish performance and labor and material payment bonds. Bonds submitted pursuant to this paragraph shall be provided by a surety authorized to do business in New Mexico.

Performance bond shall be in an amount equal to one hundred percent of the price specified in the contract and shall insure the faithful performance of all provisions of the contract and satisfactory completion of the specified work within the time agreed upon, and, covering all guarantees against defective material or workmanship in any work under the contract for a period of one calendar year after the work has been accepted.

A labor and material bond in an amount equal to one hundred percent of the price specified in the contract shall be required for the protection of all subcontractors and material suppliers. Bonds shall bear the same date as the contract.

## **PART 21 – INSURANCE REQUIREMENTS**

General: The Contractor shall not commence work under this contract until he has obtained all insurance required by the City of Lovington and such insurance has been approved. The contractor shall not allow any subcontractor to commence work on this subcontract until all similar insurance required of the subcontractor has been obtained.

The City of Lovington and their Architects and Engineers shall be additional insured's on the Contractor's general liability policy with respect to activities under this contract. The additional insured endorsement shall be ISO Form CG 20 10 11 85 or a substitute endorsement providing equivalent coverage.

The general liability insurance of the Contractor shall be primary insurance and any insurance or self-insurance of the City of Lovington or the Architect and Engineer shall be excess and not contributory insurance.

Certificate of Insurance: The Contractor shall furnish certificates of insurance to the City of Lovington and its representative showing that he carries the required insurance and insurance amounts.

If for any reason, any material change occurs in the coverage during the course of the contract; such change will not become effective until 30 days after the City of Lovington has received written notice of such change.

Insurance submitted pursuant to this requirement shall be provided by an insurance firm licensed by the New Mexico Superintendent of Insurance.

## **PART 22 – CONTRACT REQUIREMENTS**

The contract between the City of Lovington and a Contractor will follow the format specified by the City of Lovington and contain the terms and conditions set forth in the attached "Sample Contract" and Supplementary Conditions. The contents of this Sealed Bid will be incorporated into and become part of the contract. Should a bidder object to any of the City of Lovington's terms and conditions contained in the "Sample Contract", that bidder must propose specific alternative language with their bid. The City of Lovington may or may not accept the alternative language. General references to the bidder's terms and conditions or attempts at complete substitutions are not acceptable to the City of Lovington and will result in disqualification of the bidder's bid. Bidders must provide a brief discussion of the purpose and impact, if any, of each proposed change, followed by the specific proposed alternate wording. Bidders must submit with the bid a complete set of additional terms and conditions that they expect to have included in a contract negotiated with the City of Lovington.

## **PART - 23 PROTESTS**

A. Any Offeror who is aggrieved in connection with a solicitation or award of an Agreement may protest to the City of Lovington in accordance with the requirements of the state Procurement Code. The protest should be made in writing within 24 hours after the facts or occurrences giving rise thereto, but in no case later than 15 calendar days after the facts or occurrences giving rise thereto (13-1-172 NMSA 1978).

B. In the event of a timely protest under this section, the Purchasing Department shall not proceed further with the procurement unless the Purchasing Manager makes a determination that the award of an Agreement is necessary to protect substantial interests of the City of Lovington(13-1-173 NMSA 1978).

C. The Purchasing Manager or his designee shall have the authority to take any action reasonably necessary to resolve a protest of an aggrieved Offeror concerning procurement. This authority shall be exercised in accordance with adopted regulations, but shall not include the authority to award money damages or attorneys' fees (13-1-174 NMSA 1978).

D. The Purchasing Agent or his designee shall promptly issue a determination relating to the protest. The determination shall:

- 1) state the reasons for the action taken; and
- 2) **inform the protestant of the right to judicial review of the determination pursuant to**  13-1-183 NMSA 1978.

E. A copy of the determination issued under 13-1-175 NMSA 1978 shall immediately be mailed to the protestant and other Offerors involved in the procurement (13-1-176 NMSA 1978).

**PART 24 - BID ALTERNATES** - The City of Lovington shall include the ranking of Alternates in the Procurement Documents. When Alternates are to be accepted by the City of Lovington, review of the bids shall include acceptance of alternates in the order in which they are listed in the Procurement Documents. Award of the bid shall be made to the responsive bidder submitting the low combined bid which shall be the base bid and all accepted alternates within the funds available and if the City of Lovington determines it will proceed with an award of the bid. Determination of the amount of funds available Shall be made by the City of Lovington for all bid awards, whether Alternates are included or omitted, and such determination shall be final.

When no alternates are to be accepted by the City of Lovington, the award of bid shall be made to the Responsible Bidder submitting the lowest base bid, if the base bid is within funds available, and if the City of Lovington determines that it will proceed with an award of the bid.

#### **PART 25 – RESIDENT CONTRACTOR PREFERENCE**

Bids submitted by resident business/contractor shall be deemed five percent (5%) lower than the bid actually submitted. To receive a resident contractor preference a business must submit, with its bid, a copy of a valid resident contractor certification issued by the New Mexico Taxation and Revenue Department. This will not apply when the expenditure includes Federal funds, Chapter 13-4-3.

**PART 26 - RESIDENT VETERANS CONTRACTOR PREFERENCE** – In accordance with Sections 13-4-2 NMSA 1978 resident veteran contractors are to receive the following preferences:

Resident veteran contractors with annual revenues of Three Million Dollars (\$3,000,000.00) or less will be awarded an additional ten percent (10%) lower than the bid actually submitted.

This preference is separate from the current instate preference and is not cumulative with that preference. If a contractor will be utilizing this preference, they must include a copy in their proposal of the Resident Veteran contractor certificate issued by the State of New Mexico Taxation and Revenue Department. This preference will not apply when the expenditure includes federal funds for a specific purchase. Businesses must obtain the Veteran Resident Business Certification form from the NM Taxation Revenue Department (TRD) prior to the bid opening date. More information can be obtain from the NM TRD website at <http://www.tax.newmexico.gov/Default.aspx>.

## **PART 27 ACH TRANSACTIONS**

Vendors may be required to accept payment electronically through an ACH Transaction.

**PART 28 – BID DOCUMENTS REQUIRED** - The following certifications and executed documents are required as part of a valid bid:

1. Bid Schedule
2. Debarment & Suspension Certificate
3. Non-Collusion Affidavit
4. Bid Bond
5. Related Party Disclosure Form
6. Campaign Contribution Disclosure Form
7. Sub Contractor Listing
8. Acknowledgements to any addendums
9. Bidders Statement of Qualifications

## PROJECT SUMMARY

### **DESCRIPTION WORK**

**PROJECT:** Fire Station # 2

**LOCATION:** 1424 N. 17<sup>th</sup> Street

**CONSTRUCTION DOCUMENTS CONTACT:** Joseph Fuemmeler, Project Architect

**CONTACT NUMBER:** 575-528-0022

**OWNER:** City of Lovington, New Mexico

**PROJECT NUMBER:** 445-02

### **PROJECT DESCRIPTION:**

The City of Lovington Fire Station #2 will be approximately 9,589 square feet and will include new office space, training room, a four-bay apparatus garage, a residential area with a living room, dining room, kitchen and six bedrooms. As well as site and utility work associated with the new building.

The work to be performed under this contract shall commenced no later than ten (10) consecutive calendar days after date of written notice to proceed. Substantial Completion shall be achieved no later than 300 consecutive calendar days from the date of Notice to Proceed, except as hereafter extended with a valid written change order signed by the City Manager.

Liquidated damages shall be assessed to the awarded Contractor at a rate of one thousand dollars (\$1,000) per day for each calendar day that actual Substantial Completion exceeds the contract time.

Issued By: City of Lovington, New Mexico

214 South Love Street  
Lovington, New Mexico 88260  
James R. Williams – City Manager  
Office (575) 396-2884  
Email: [jwilliams@lovington.org](mailto:jwilliams@lovington.org)

**BID SCHEDULE**

**Title:** Fire Station #2

<b>Lump Sum in Numbers:</b>	\$ _____
<b>Lump Sum in Words:</b>	

**The undersigned declares that before preparing their bid, they read carefully all instructions, specifications, terms, conditions and requirements for Bidders and their bid is made with full knowledge of the kind, quality and quantity of goods, services and equipment to be furnished.**

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
City/State/Zip Code

\_\_\_\_\_  
Phone/Fax/Email

\_\_\_\_\_  
Acknowledgement of Addenda Received

\_\_\_\_\_  
New Mexico Contractor License Number

\_\_\_\_\_  
Workforce Solutions Department (WSD) (DOL) Registration Number

Proposer:

By: \_\_\_\_\_  
(Authorized Signature signed in ink) (Date)

(SEAL)

\_\_\_\_\_  
(Printed Name of Signer)

\_\_\_\_\_  
(Title of Signer)

**Certification Regarding**  
**Debarment, Suspension, and Other Responsibility Matters**

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The prospective participant certifies to the best of its knowledge and belief that it and its principals:

- (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- (b) Have not within a three year period preceding this proposal been convicted of all had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State Antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- (c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1) (b) of this certification; and
- (d) Have not within a three-year period preceding this application/proposal had one or more public transaction (Federal, State, or local) terminated for cause or default.

I understand that a false statement on this certification may be ground for rejection of this proposal or termination of the award. Under 18USC Sec. 1001, a false statement may result in a fine of up to \$10,000 or imprisonment for up to 5 years, or both.

---

Typed Name & Title of Authorized Representative

---

Signature of Authorized Representative

---

Date



**NON-COLLUSION AFFIDAVIT**

STATE OF \_\_\_\_\_)

SS: City of Lovington

OF \_\_\_\_\_)

, being first duly sworn, deposes and says: That

he/she is \_\_\_\_\_ of

\_\_\_\_\_ (title)

who submits herewith to the City of Lovington, a proposal:

That all statement of fact in such proposal are true:

That said proposal was not made in the interest of or on behalf of any undisclosed person, partnership, company, association, organization or corporation;

That said bidder has not, directly or indirectly by agreement, communication or conference with anyone attempted to induce action prejudicial to the interest of the City of Lovington, or of any bidder of anyone else interested in the proposed contract; and further,

That prior to the public opening and reading or proposal, said bidder:

1. Did not directly or indirectly, induce or solicit anyone else to submit a false or sham proposal
2. Did not directly or indirectly collude, conspire, connive or agree with anyone else that said bidder or anyone else would submit a false or sham proposal, or that anyone should refrain from bidding or withdraw his proposals;
3. Did not in any manner, directly or indirectly, seek by agreement, communication or conference with anyone to raise or fix the proposal price of said bidder or of anyone else, or to raise or fix any overhead, profit or cost element of their proposal price, or of that of anyone else;
4. Did not directly or indirectly, submit his proposed price or any breakdown thereof, or the contest thereof, or divulge information or data relative thereto, to any corporation, partnership, company, association organization, bid depository or to any member or agent thereof, or to nay individual of group of individuals, except that City of Lovington, or to any person or persons who have a partnership or other financial interests with said bidder in his business.

By: \_\_\_\_\_

SUBSCRIBED and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

Notary Public: \_\_\_\_\_

My Commission Expires: \_\_\_\_\_

**BID BOND - Sample**

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned,

\_\_\_\_\_ as  
Principal, and \_\_\_\_\_  
As Surety, are hereby held and firmly bound unto \_\_\_\_\_

\_\_\_\_\_ as Owner in the penal sum of \_\_\_\_\_ for which, well And truly to be  
made, we herby jointly and severally bind ourselves, our heirs, executives, administrators, successors, and  
assigns.

SIGNED, this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

The condition of the above obligation is such that whereas the Principal has submitted to the Owner a  
certain Bid, attached hereto and hereby made a part hereof to enter into a contract in writing. For (Project)

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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, attached hereto (properly completed in accordance with said Bid) and shall furnish a Bond (Bid Security) for the faithful performance of said Contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in al 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 receive, 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 signed by their proper officers, the day and year first set forth above.

\_\_\_\_\_  
Principal:

(seal) Surety: \_\_\_\_\_

By: \_\_\_\_\_

**Related Party Disclosure Form**

1. Are you indebted to or have a receivable from any member of the Board of City of Lovington Commissioners; elected city officials, administration officials, department heads, and key management supervisors with the City of Lovington?

Yes \_\_\_\_\_ No \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. Are you, or any officer of your company related to any member of the Board of Commissioners; elected city officials, administration officials, department heads, key management supervisors of the City of Lovington and have you had any of the following transactions, to which the City of Lovington was, is to be, a party?

	Yes	No
Sales, Purchase or leasing of property?	_____	_____
Receiving, furnishing of goods, services or facilities?	_____	_____
Commissions or royalty payments	_____	_____

\_\_\_\_\_

\_\_\_\_\_

3. Does any member of the Board of Commissioners; elected city officials, administration officials, department heads, key management supervisors with the City of Lovington, have any financial interest in your company whether a sole proprietorship, partnership, or corporation of any kind that currently conducts business with the City of Lovington?

Yes \_\_\_\_\_ No \_\_\_\_\_

\_\_\_\_\_

4. Did you, your company, or any officer of your company have an interest in or signature authority over a bank account for the benefit of a member of the Board of Commissioners; elected city officials, administration officials, department heads, key management supervisors with the City of Lovington?

Yes \_\_\_\_\_ No \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5. Are you negotiating to employ or do you currently employ any employee, officer or family member of an employee or officer of City of Lovington?

Yes \_\_\_\_\_ No \_\_\_\_\_

\_\_\_\_\_

**The answers to the foregoing questions are correctly stated to the best of my knowledge and belief.**

**Signature of Owner or Company President:** \_\_\_\_\_ **Date** \_\_\_\_\_  
**(Print Name and Title):** \_\_\_\_\_

## CAMPAIGN CONTRIBUTION DISCLOSURE FORM

Pursuant to the Procurement Code, Sections 13-1-28, et seq., NMSA 1978 and NMSA 1978, § 13-1-191.1 (2006), as amended by Laws of 2007, Chapter 234, any prospective contractor seeking to enter into a contract with any state agency or local public body **for professional services, a design and build project delivery system, or the design and installation of measures the primary purpose of which is to conserve natural resources** must file this form with that state agency or local public body. This form must be filed even if the contract qualifies as a small purchase or a sole source contract. The prospective contractor must disclose whether they, a family member or a representative of the prospective contractor has made a campaign contribution to an applicable public official of the state or a local public body during the two years prior to the date on which the contractor submits a proposal or, in the case of a sole source or small purchase contract, the two years prior to the date the contractor signs the contract, if the aggregate total of contributions given by the prospective contractor, a family member or a representative of the prospective contractor to the public official exceeds two hundred and fifty dollars (\$250) over the two year period.

Furthermore, the state agency or local public body may cancel a solicitation or proposed award for a proposed contract pursuant to Section 13-1-181 NMSA 1978 or a contract that is executed may be ratified or terminated pursuant to Section 13-1-182 NMSA 1978 of the Procurement Code if: 1) a prospective contractor, a family member of the prospective contractor, or a representative of the prospective contractor gives a campaign contribution or other thing of value to an applicable public official or the applicable public official's employees during the pendency of the procurement process or 2) a prospective contractor fails to submit a fully completed disclosure statement pursuant to the law.

The state agency or local public body that procures the services or items of tangible personal property shall indicate on the form the name or names of every applicable public official, if any, for which disclosure is required by a prospective contractor.

THIS FORM MUST BE INCLUDED IN THE REQUEST FOR PROPOSALS AND MUST BE FILED BY ANY PROSPECTIVE CONTRACTOR WHETHER OR NOT THEY, THEIR FAMILY MEMBER, OR THEIR REPRESENTATIVE HAS MADE ANY CONTRIBUTIONS SUBJECT TO DISCLOSURE.

The following definitions apply:

**"Applicable public official"** means a person elected to an office or a person appointed to complete a term of an elected office, who has the authority to award or influence the award of the contract for which the prospective contractor is submitting a competitive sealed proposal or who has the authority to negotiate a sole source or small purchase contract that may be awarded without submission of a sealed competitive proposal.

**"Campaign Contribution"** means a gift, subscription, loan, advance or deposit of money or other thing of value, including the estimated value of an in-kind contribution, that is made to or received by an applicable public official or any person authorized to raise, collect or expend contributions on that official's behalf for the purpose of electing the official to statewide or local office. "Campaign Contribution" includes the payment of a debt incurred in an election campaign, but does not include the value of services provided without compensation or unreimbursed travel or other personal expenses of individuals who volunteer a portion or all of their time on behalf of a candidate or political committee, nor does it include the administrative or solicitation expenses of a political committee that are paid by an organization that sponsors the committee.

**"Family member"** means spouse, father, mother, child, father-in-law, mother-in-law, daughter-in-law or son-in-law of (a) a prospective contractor, if the prospective contractor is a natural person; or (b) an owner of a prospective contractor.

**"Pendency of the procurement process"** means the time period commencing with the public notice of the request for proposals and ending with the award of the contract or the cancellation of the request for proposals.

**"Prospective contractor"** means a person or business that is subject to the competitive sealed proposal process set forth in the Procurement Code or is not required to submit a competitive sealed proposal because that person or business qualifies for a sole source or a small purchase contract.

**“Representative of a prospective contractor”** means an officer or director of a corporation, a member or manager of a limited liability corporation, a partner of a partnership or a trustee of a trust of the prospective contractor.

Name(s) of Applicable Public Official(s) if any: **Board Of City Commissioners:**

DISCLOSURE OF CONTRIBUTIONS BY PROSPECTIVE CONTRACTOR:

Contribution Made By: \_\_\_\_\_

Relation to Prospective Contractor: \_\_\_\_\_

Date Contribution(s) Made: \_\_\_\_\_  
\_\_\_\_\_

Amount(s) of Contribution(s) \_\_\_\_\_  
\_\_\_\_\_

Nature of Contribution(s) \_\_\_\_\_  
\_\_\_\_\_

Purpose of Contribution(s) \_\_\_\_\_  
\_\_\_\_\_

(Attach extra pages if necessary)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title (position)

**--OR--**

**NO CONTRIBUTIONS IN THE AGGREGATE TOTAL OVER TWO HUNDRED FIFTY DOLLARS (\$250) WERE MADE** to an applicable public official by me, a family member or representative.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title (Position)

**LIST OF SUBCONTRACTORS**

The list of Subcontractors shall be fully executed and included with the bid as a condition of the bid. It shall include all Subcontractors who will perform work or labor or render service to the Contractor in or about the construction of the public works construction project in an amount in excess of \$5,000 or ½ of 1 percent of the Architect's estimate whichever is greater:

NAME, ADDRESS	LICENSE CLASSIFICATION	NATURE OF WORK (*)
NAME, ADDRESS:  LICENSE NO.:  DWS NO:	LICENSE CLASSIFICATION:	NATURE OF WORK (*)  LICENSE ISSUED TO:
LICENSE NO.:  DWS NO:	LICENSE CLASSIFICATION:	LICENSE ISSUED TO:
LICENSE NO.:  DWS NO:	LICENSE CLASSIFICATION:	LICENSE ISSUED TO:
LICENSE NO.:  DWS NO:	LICENSE CLASSIFICATION:	LICENSE ISSUED TO:

ADDITIONAL SHEETS LISTING SUBCONTRACTORS MAY BE ATTACHED IF NECESSARY.

(\*) NOTE: Contractor shall list only one Subcontractor for each category of work including in their bid.

## LIST OF REFERENCES

All bids received by City of Lovington must include the following list of references. The list of references shall be fully executed and included with the bids as a condition of the bid. It shall include a minimum of three (3) references who have employed the Prime Contractor for similar construction projects within the past five years where the cost has exceeded \$25,000.00.

	REFERENCE NO.1	REFERENCE NO.2	REFERENCE NO.3
FIRM NAME			
CONTACT PERSON			
PHONE NUMBER			
NATURE OF WORK DONE			
COST OF WORK DONE			
LOCATION OF WORK			
ADDRESS OF WORK DONE			
PROJECT NAME AND/OR PROJECT NUMBER			

Additional sheets listing references may be attached if necessary.

**Failure to comply with the requirements stated above shall be grounds for rejection of the bid.**

**BIDDER'S STATEMENT OF QUALIFICATIONS**

All bidders on this project must meet certain licensing and qualifications requirements in order to provide a valid bid on this project for City of Lovington. Each bidder is required to fill out this form in order to have his or her bid considered.

**Company Name:** \_\_\_\_\_

**Company Address:** \_\_\_\_\_

**Company Phone Number:** \_\_\_\_\_

**New Mexico Contractors License Number:** \_\_\_\_\_

**License Classification:** \_\_\_\_\_

**Name on License, if different from Company name listed above:** \_\_\_\_\_

**Name of responsible individual authorized to present bids with this license:** \_\_\_\_\_

**Attach a Copy of your Business License**

**Please provide a brief description of your qualifications to perform the work required to complete this project to the satisfaction of the City of Lovington.**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



**ADDENDA**

Receipt of Addendum No.(s), \_\_\_\_\_ is hereby acknowledged. (Where none received, place figure zero in this space.)

Dated at Lovington, New Mexico, this \_\_\_\_\_ day, of \_\_\_\_\_, 2013.

BIDDER:	
BY:	
TITLE:	
ADDRESS:	
TELEPHONE:	
FAX:	

BIDDER'S CHECKLIST  
CITY OF LOVINGTON / PURCHASING DEPARTMENT

Did You:

- ☞ Sign and notarize the “Non-Collusion Affidavit” form.
- ☞ Sign the “Certification Regarding Debarment, Suspension, and Other Responsibility Matters” form.
- ☞ Include your bidder’s bond.
- ☞ Complete the Related Party Disclosure Form
- ☞ Complete the Campaign Contribution Disclosure Form
- ☞ Include your List of Sub-Contractors
- ☞ Include your List of References
- ☞ Fill out and include Statement of Qualifications
- ☞ Acknowledge all addenda
- ☞ Complete and sign the Bid Schedule
- ☞ Recheck your math on each item extension and total column; do not superimpose numerals on your bid forms. If erasures or interlineations appear on your bid form, they must be initialed by the person preparing the bid.
- ☞ Review all clarifications/questions/answers. Submit one (1) ORIGINAL of all bid documents.
- ☞ Deliver sealed bid to City of Lovington, New Mexico located at 214 South Love Street, Lovington, New Mexico 88 260 before October 2, 2018 at 2:00 pm (local time). Sealed Bid shall be marked **445-02, Fire Station # 2, and bid opening date.**
- ☞ Clearly marked on the front of the envelope and indicate project name, number, and bid opening date.

\* If not completed as required, your bid may be deem non-responsive.

Contact the City of Lovington immediately if any portion is missing. This form is for your information only and does not need to be submitted with your bid.



# AIA<sup>®</sup> Document A101<sup>™</sup> – 2017

## Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

**AGREEMENT** made as of the \_\_\_\_\_ day of \_\_\_\_\_ in the year \_\_\_\_\_  
*(In words, indicate day, month and year.)*

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

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

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

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

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

The parties should complete A101<sup>™</sup>-2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement.

AIA Document A201<sup>™</sup>-2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

Sample

The Owner and Contractor agree as follows.

Init.

## TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS
- 2 THE WORK OF THIS CONTRACT
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## EXHIBIT A INSURANCE AND BONDS

### ARTICLE 1 THE CONTRACT DOCUMENTS

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

### ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

### ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:

*(Check one of the following boxes.)*

- The date of this Agreement.
- A date set forth in a notice to proceed issued by the Owner.
- Established as follows:  
*(Insert a date or a means to determine the date of commencement of the Work.)*

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

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

#### § 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

*(Check one of the following boxes and complete the necessary information.)*

- Not later than ( ) calendar days from the date of commencement of the Work.

By the following date:

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date
-----------------	-----------------------------

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

#### ARTICLE 4 CONTRACT SUM

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

#### § 4.2 Alternates

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

Item	Price
------	-------

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement. (Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance
------	-------	---------------------------

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

Item	Price
------	-------

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

Item	Units and Limitations	Price per Unit (\$0.00)
------	-----------------------	-------------------------

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

§ 4.6 Other:  
(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

## ARTICLE 5 PAYMENTS

### § 5.1 Progress Payments

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

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the        day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the        day of the month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than        (    ) days after the Architect receives the Application for Payment.

*(Federal, state or local laws may require payment within a certain period of time.)*

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

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

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

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

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

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

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

### § 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

*(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)*

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

**§ 5.1.7.2** Reduction or limitation of retainage, if any, shall be as follows:  
*(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)*

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

**§ 5.1.8** If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

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

**§ 5.2 Final Payment**

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

- .1 the Contractor has fully performed the Contract except for the Contractor’s responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

**§ 5.2.2** The Owner’s final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect’s final Certificate for Payment, or as follows:

**§ 5.3 Interest**

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

*(Insert rate of interest agreed upon, if any.)*

\_\_\_\_\_ % \_\_\_\_\_

**ARTICLE 6 DISPUTE RESOLUTION**

**§ 6.1 Initial Decision Maker**

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.

*(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)*

## § 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:

*(Check the appropriate box.)*

- Arbitration pursuant to Section 15.4 of AIA Document A201–2017
- Litigation in a court of competent jurisdiction
- Other *(Specify)*

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

## ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 7.1.1 If the Contract is terminated for the Owner’s convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:

*(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner’s convenience.)*

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

## ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner’s representative:

*(Name, address, email address, and other information)*

§ 8.3 The Contractor’s representative:

*(Name, address, email address, and other information)*

§ 8.4 Neither the Owner’s nor the Contractor’s representative shall be changed without ten days’ prior notice to the other party.



**§ 8.5 Insurance and Bonds**

**§ 8.5.1** The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

**§ 8.5.2** The Contractor shall provide bonds as set forth in AIA Document A101™–2017 Exhibit A, and elsewhere in the Contract Documents.

**§ 8.6** Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

*(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)*

**§ 8.7** Other provisions:

**ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS**

**§ 9.1** This Agreement is comprised of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction
- .4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:  
*(Insert the date of the E203-2013 incorporated into this Agreement.)*

.5 Drawings

Number	Title	Date
--------	-------	------

.6 Specifications

Section	Title	Date	Pages
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.7 Addenda, if any:

Number	Date	Pages
--------	------	-------

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

.8 Other Exhibits:

*(Check all boxes that apply and include appropriate information identifying the exhibit where required.)*

- AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:  
*(Insert the date of the E204-2017 incorporated into this Agreement.)*

The Sustainability Plan:

Title	Date	Pages
-------	------	-------

Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
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.9 Other documents, if any, listed below:

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

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

\_\_\_\_\_  
OWNER (Signature)

\_\_\_\_\_  
CONTRACTOR (Signature)

\_\_\_\_\_  
(Printed name and title)

\_\_\_\_\_  
(Printed name and title)



# AIA<sup>®</sup> Document A201<sup>™</sup> – 2017

## General Conditions of the Contract for Construction

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

THE OWNER:  
*(Name, legal status and address)*

THE ARCHITECT:  
*(Name, legal status and address)*

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

For guidance in modifying this document to include supplementary conditions, see AIA Document A503<sup>™</sup>, Guide for Supplementary Conditions.

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## **ARTICLE 1 GENERAL PROVISIONS**

### **§ 1.1 Basic Definitions**

#### **§ 1.1.1 The Contract Documents**

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

#### **§ 1.1.2 The Contract**

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

#### **§ 1.1.3 The Work**

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

#### **§ 1.1.4 The Project**

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

#### **§ 1.1.5 The Drawings**

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

#### **§ 1.1.6 The Specifications**

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

#### **§ 1.1.7 Instruments of Service**

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

#### **§ 1.1.8 Initial Decision Maker**

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

### **§ 1.2 Correlation and Intent of the Contract Documents**

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

**§ 1.2.1.1** The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining

provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

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

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

### **§ 1.3 Capitalization**

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

### **§ 1.4 Interpretation**

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

### **§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service**

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

**§ 1.5.2** The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

### **§ 1.6 Notice**

**§ 1.6.1** Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

**§ 1.6.2** Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

### **§ 1.7 Digital Data Use and Transmission**

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

### **§ 1.8 Building Information Models Use and Reliance**

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building

information model, and each of their agents and employees.

## **ARTICLE 2 OWNER**

### **§ 2.1 General**

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

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

### **§ 2.2 Evidence of the Owner's Financial Arrangements**

**§ 2.2.1** Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

**§ 2.2.2** Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

**§ 2.2.3** After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

**§ 2.2.4** Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

### **§ 2.3 Information and Services Required of the Owner**

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

**§ 2.3.2** The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

**§ 2.3.3** If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

**§ 2.3.4** The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the

site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

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

**§ 2.3.6** Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

#### **§ 2.4 Owner's Right to Stop the Work**

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

#### **§ 2.5 Owner's Right to Carry Out the Work**

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

### **ARTICLE 3 CONTRACTOR**

#### **§ 3.1 General**

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

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

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

#### **§ 3.2 Review of Contract Documents and Field Conditions by Contractor**

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

**§ 3.2.2** Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's

capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

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

**§ 3.2.4** If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

### **§ 3.3 Supervision and Construction Procedures**

**§ 3.3.1** The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

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

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

### **§ 3.4 Labor and Materials**

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

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

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

### **§ 3.5 Warranty**

**§ 3.5.1** The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes

remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

**§ 3.5.2** All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

### **§ 3.6 Taxes**

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

### **§ 3.7 Permits, Fees, Notices and Compliance with Laws**

**§ 3.7.1** Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

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

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

### **§ 3.7.4 Concealed or Unknown Conditions**

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

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

### **§ 3.8 Allowances**

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

**§ 3.8.2** Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and



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

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

**§ 3.9 Superintendent**

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

**§ 3.9.2** The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

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

**§ 3.10 Contractor's Construction and Submittal Schedules**

**§ 3.10.1** The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

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

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

**§ 3.11 Documents and Samples at the Site**

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

**§ 3.12 Shop Drawings, Product Data and Samples**

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

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

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

**§ 3.12.4** Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

**§ 3.12.5** The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

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

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

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

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

**§ 3.12.10** The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

**§ 3.12.10.1** If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

**§ 3.12.10.2** If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the

time and in the form specified by the Architect.

### **§ 3.13 Use of Site**

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

### **§ 3.14 Cutting and Patching**

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

**§ 3.14.2** The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

### **§ 3.15 Cleaning Up**

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

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

### **§ 3.16 Access to Work**

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

### **§ 3.17 Royalties, Patents and Copyrights**

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

### **§ 3.18 Indemnification**

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

**§ 3.18.2** In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

## ARTICLE 4 ARCHITECT

### § 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

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

### § 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

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

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

### § 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

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

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under

Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

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

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

**§ 4.2.10** If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

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

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

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

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

## **ARTICLE 5 SUBCONTRACTORS**

### **§ 5.1 Definitions**

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

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

### **§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work**

**§ 5.2.1** Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

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

**§ 5.2.3** If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the

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

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

### **§ 5.3 Subcontractual Relations**

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

### **§ 5.4 Contingent Assignment of Subcontracts**

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

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

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

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

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

## **ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS**

### **§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts**

**§ 6.1.1** The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

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

**§ 6.1.3** The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate

Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

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

### **§ 6.2 Mutual Responsibility**

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

**§ 6.2.2** If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

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

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

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

### **§ 6.3 Owner's Right to Clean Up**

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

## **ARTICLE 7 CHANGES IN THE WORK**

### **§ 7.1 General**

**§ 7.1.1** Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

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

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

### **§ 7.2 Change Orders**

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

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

### **§ 7.3 Construction Change Directives**

**§ 7.3.1** A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

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

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

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.

**§ 7.3.4** If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

**§ 7.3.5** If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

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

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

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

**§ 7.3.9** Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The



Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

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

#### **§ 7.4 Minor Changes in the Work**

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

### **ARTICLE 8 TIME**

#### **§ 8.1 Definitions**

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

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

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

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

#### **§ 8.2 Progress and Completion**

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

**§ 8.2.2** The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

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

#### **§ 8.3 Delays and Extensions of Time**

**§ 8.3.1** If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

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

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

### **ARTICLE 9 PAYMENTS AND COMPLETION**

#### **§ 9.1 Contract Sum**

**§ 9.1.1** The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable

by the Owner to the Contractor for performance of the Work under the Contract Documents.

**§ 9.1.2** If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

### **§ 9.2 Schedule of Values**

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

### **§ 9.3 Applications for Payment**

**§ 9.3.1** At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

**§ 9.3.1.1** As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

**§ 9.3.1.2** Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

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

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

### **§ 9.4 Certificates for Payment**

**§ 9.4.1** The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

**§ 9.4.2** The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The

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

### **§ 9.5 Decisions to Withhold Certification**

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

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

**§ 9.5.2** When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

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

**§ 9.5.4** If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

### **§ 9.6 Progress Payments**

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

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

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

**§ 9.6.4** The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers

to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

**§ 9.6.5** The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

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

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

**§ 9.6.8** Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

#### **§ 9.7 Failure of Payment**

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

#### **§ 9.8 Substantial Completion**

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

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

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

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

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

### **§ 9.9 Partial Occupancy or Use**

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

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

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

### **§ 9.10 Final Completion and Final Payment**

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

**§ 9.10.2** Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

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

constitute a waiver of Claims.

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

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

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

## **ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY**

### **§ 10.1 Safety Precautions and Programs**

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

### **§ 10.2 Safety of Persons and Property**

**§ 10.2.1** The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

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

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

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

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

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

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

### **§ 10.2.8 Injury or Damage to Person or Property**

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

### **§ 10.3 Hazardous Materials and Substances**

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

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

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

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

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

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

### **§ 10.4 Emergencies**

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

## **ARTICLE 11 INSURANCE AND BONDS**

### **§ 11.1 Contractor's Insurance and Bonds**

**§ 11.1.1** The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the

endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

**§ 11.1.2** The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

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

**§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance.** Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

## **§ 11.2 Owner's Insurance**

**§ 11.2.1** The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

**§ 11.2.2 Failure to Purchase Required Property Insurance.** If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

**§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance.** Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

## **§ 11.3 Waivers of Subrogation**

**§ 11.3.1** The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The



Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

**§ 11.3.2** If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

#### **§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance**

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

#### **§ 11.5 Adjustment and Settlement of Insured Loss**

**§ 11.5.1** A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

**§ 11.5.2** Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

### **ARTICLE 12 UNCOVERING AND CORRECTION OF WORK**

#### **§ 12.1 Uncovering of Work**

**§ 12.1.1** If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

**§ 12.1.2** If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

#### **§ 12.2 Correction of Work**

##### **§ 12.2.1 Before Substantial Completion**

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the

Contractor's expense.

### **§ 12.2.2 After Substantial Completion**

**§ 12.2.2.1** In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

**§ 12.2.2.2** The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

**§ 12.2.2.3** The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

**§ 12.2.3** The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

**§ 12.2.4** The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

**§ 12.2.5** Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

### **§ 12.3 Acceptance of Nonconforming Work**

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

## **ARTICLE 13 MISCELLANEOUS PROVISIONS**

### **§ 13.1 Governing Law**

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

### **§ 13.2 Successors and Assigns**

**§ 13.2.1** The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

**§ 13.2.2** The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

### § 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

### § 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

### § 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

## ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

### § 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

**§ 14.1.2** The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

**§ 14.1.3** If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

**§ 14.1.4** If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

## **§ 14.2 Termination by the Owner for Cause**

**§ 14.2.1** The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or Suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

**§ 14.2.2** When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

**§ 14.2.3** When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

**§ 14.2.4** If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

## **§ 14.3 Suspension by the Owner for Convenience**

**§ 14.3.1** The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

**§ 14.3.2** The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

#### **§ 14.4 Termination by the Owner for Convenience**

**§ 14.4.1** The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

**§ 14.4.2** Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

**§ 14.4.3** In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

### **ARTICLE 15 CLAIMS AND DISPUTES**

#### **§ 15.1 Claims**

##### **§ 15.1.1 Definition**

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

##### **§ 15.1.2 Time Limits on Claims**

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

##### **§ 15.1.3 Notice of Claims**

**§ 15.1.3.1** Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

**§ 15.1.3.2** Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

##### **§ 15.1.4 Continuing Contract Performance**

**§ 15.1.4.1** Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

**§ 15.1.4.2** The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

##### **§ 15.1.5 Claims for Additional Cost**

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

##### **§ 15.1.6 Claims for Additional Time**

**§ 15.1.6.1** If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section

15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

**§ 15.1.6.2** If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

#### **§ 15.1.7 Waiver of Claims for Consequential Damages**

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

#### **§ 15.2 Initial Decision**

**§ 15.2.1** Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

**§ 15.2.2** The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

**§ 15.2.3** In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

**§ 15.2.4** If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

**§ 15.2.5** The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

**§ 15.2.6** Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

**§ 15.2.6.1** Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

**§ 15.2.7** In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

**§ 15.2.8** If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

### **§ 15.3 Mediation**

**§ 15.3.1** Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

**§ 15.3.2** The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

**§ 15.3.3** Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

**§ 15.3.4** The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

### **§ 15.4 Arbitration**

**§ 15.4.1** If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

**§ 15.4.1.1** A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

**§ 15.4.2** The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

**§ 15.4.3** The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly

consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

**§ 15.4.4 Consolidation or Joinder**

**§ 15.4.4.1** Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

**§ 15.4.4.2** Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

**§ 15.4.4.3** The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

Sample





STATE OF NEW MEXICO  
NEW MEXICO DEPARTMENT OF  
WORKFORCE SOLUTIONS  
Labor Relations Division  
121 Tijeras Ave NE, Suite 3000  
Albuquerque, NM 87102  
[www.dws.state.nm.us](http://www.dws.state.nm.us)

## PUBLIC WORKS PROJECT REQUIREMENTS

As a participant in a Public Works project valued at more than \$60,000 in the State of New Mexico, the following list addresses many of the responsibilities that are defined by statute or regulation to each project stakeholder.

### Contracting Agency

- Ensure that all Contractors wishing to bid on a Public Works project when the project is \$60,000 or more are actively registered with the Public Works and Apprenticeship Application (PWAA) website: <http://www.dws.state.nm.us/pwaa> (Contractor Registration) prior to bidding.
- Please submit Notice of Award (NOA) and Subcontractor List(s) to the PWAA website promptly after the project is awarded.
- Please update the Subcontractor List(s) on the PWAA website whenever changes occur.
- All Sub-Contractors and tiers (excluding professional services) regardless of contract amount must be listed on the Subcontractor List and must adhere to the Public Works Minimum Wage Act.
- Ninety days after project completion please go into the PWAA system and close the project. Only Contracting Agencies are allowed to close the project. Agents or Contractors are not allowed to close projects.

### General Contractor

- Provide a complete Subcontractor List and Statements of Intent (SOI) to Pay Prevailing Wages for all Contractors, regardless of amount of work, to the Contracting Agency within 3 (three) days of award.
- Ensure that all Subcontractors wishing to bid on a Public Works project have an active Contractor Registration with the Public Works and Apprenticeship Application (PWAA) website: <http://www.dws.state.nm.us/pwaa> prior to bidding when their bid will exceed \$60,000.
- Submit weekly certified payroll bi-weekly to the Contracting Agency.
- Make certain the Public Works Apprentice and Training Act contributions are paid either to an approved Apprenticeship Program or to the Public Works Apprentice and Training Fund.
- Confirm the Wage Rate poster, provided in PWAA, is displayed at the job site in an easily accessible place.
- Make sure, when a project has been completed, the Affidavits of Wages Paid (AWP) are sent to the Contracting Agency.



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NEW MEXICO DEPARTMENT OF  
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Labor Relations Division  
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Albuquerque, NM 87102  
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- All Subcontractors and tiers (excluding professional services) regardless of contract amount must be listed on the Subcontractor List and must adhere to the Public Works Minimum Wage Act.

## **Subcontractor**

- Ensure that all Subcontractors wishing to bid on a Public Works project have an active Contractor Registration with the Public Works and Apprenticeship Application (PWAA) website: <http://www.dws.state.nm.us/pwaa> prior to bidding when their bid will exceed \$60,000.
- Submit weekly certified payroll bi-weekly to the General Contractor(s).
- Make certain the Public Works Apprentice and Training Act contributions are paid either to an approved Apprenticeship Program or to the Public Works Apprentice and Training Fund.
- All Subcontractors and tiers (excluding professional services) regardless of contract amount must be listed on the Subcontractor List and must adhere to the Public Works Minimum Wage Act.

## **Additional Information**

Reference material and forms may be found at New Mexico Department of Workforce Solutions Public Works web pages at: <https://www.dws.state.nm.us/Labor-Relations/Labor-Information/Public-Works>.

## **CONTACT INFORMATION**

Contact the Labor Relations Division for any questions relating to Public Works projects by email at [public.works@state.nm.us](mailto:public.works@state.nm.us) or call (505) 841-4400.



## Wage Decision Approval Summary

1) Project Title: Fire Station #2  
 Requested Date: 06/22/2018  
 Approved Date: 06/25/2018  
 Approved Wage Decision Number: LE-18-1102-B

### Wage Decision Expiration Date for Bids: 10/23/2018

2) Physical Location of Jobsite for Project:  
 Job Site Address: 1600 N. 17th  
 Job Site City: Lovington  
 Job Site County: Lea

3) Contracting Agency Name (Department or Bureau): City of Lovington  
 Contracting Agency Contact's Name: James Williams  
 Contracting Agency Contact's Phone: (575) 396-2884 Ext. 303

4) Estimated Contract Award Date: 09/01/2018

5) Estimated total project cost: \$3,400,000.00

a. Are any federal funds involved?: No

b. Does this project involve a building?: Yes - Construction of a new fire station. Project will include all site preparation, construction of building, installation of electrical, water, sewer, gas within the building, HVAC systems, construction of parking areas, fencing for secure parking. Facility is designed to include a four bay apparatus garage, living area to accommodate 6 personnel, a kitchen, community, and office areas.

c. Is this part of a larger plan for construction on or appurtenant to the property that is subject to this project?: No

d. Are there any other Public Works Wage Decisions related to this project?: No

e. What is the ultimate purpose or functional use of the construction once it is completed?: Construction of a new fire station. Project will include all site preparation, construction of building, installation of electrical, water, sewer, gas within the building, HVAC systems, construction of parking areas, fencing for secure parking. Facility is designed to include a four bay apparatus garage, living area to accommodate 6 personnel, a kitchen, community, and office areas.

6) Classifications of Construction:

Classification Type and Cost Total	Description
<b>General Building (B)</b> <b>Cost: \$3,400,000.00</b>	Construction of a new fire station. Project will include all site preparation, construction of building, installation of electrical, water, sewer, gas within the building, HVAC systems, construction of parking areas, fencing for secure parking. Facility is designed to include a four bay apparatus garage, living area to accommodate 6 personnel, a kitchen, community, and office areas.

**Type "B" - GENERAL BUILDING**  
**Effective January 1, 2018**

	<b>Base Rate</b>	<b>Fringe Rate</b>	<b>Apprenticeship</b>
Asbestos Worker - Heat & Frost Insulator	31.76	11.11	0.67
Boilermaker	32.06	27.35	0.67
Bricklayer/Blocklayer/ Stonemason	23.52	8.10	0.67
Carpenter/Lather	24.00	9.47	0.67
Cement Mason	20.37	9.78	0.67
<b>Electricians-Outside Classifications</b>			
Groundman	22.36	11.34	0.67
Equipment Operator	32.08	13.77	0.67
Lineman/Tech	37.75	15.19	0.67
Cable Splicer	41.53	16.14	0.67
<b>Inside Classifications</b>			
Wireman/Technician	30.40	10.36	0.67
Cable Splicer	33.44	10.45	0.67
<b>Sound Classifications</b>			
Installer	23.39	8.31	0.67
Technician	28.95	7.52	0.67
Soundman	27.01	8.31	0.67
Elevator Constructor	41.10	32.40	0.67
Elevator Constructor Helper	28.77	32.40	0.67
Glazier	20.25	4.55	0.67
Ironworker	26.50	14.66	0.67
Painter (Brush/Roller/Spray)	16.75	5.88	0.67
Paper Hanger	16.75	5.88	0.67
Drywall Finisher/Taper	24.00	9.47	0.67
Plasterer	22.07	8.16	0.67
Plumber/Pipefitter	28.95	11.38	0.67
Roofer	23.78	7.60	0.67
Sheetmetal Worker	29.28	17.16	0.67
Soft Floor Layer	24.00	9.47	0.67
Sprinkler Fitter	29.90	19.67	0.67
Tile Setter	23.52	8.10	0.67
Tile Setter Helper/Finisher	15.59	8.10	0.67
<b>Laborers</b>			
Group I	16.09	5.68	0.67
Group II	17.00	5.68	0.67
Group III	18.00	5.68	0.67
Group IV	20.25	5.68	0.67
<b>Operators</b>			
Group I	20.32	6.47	0.67
Group II	22.38	6.47	0.67
Group III	22.82	6.47	0.67
Group IV	23.24	6.47	0.67
Group V	23.41	6.47	0.67
Group VI	23.62	6.47	0.67
Group VII	23.73	6.47	0.67
Group VIII	26.61	6.47	0.67
Group IX	28.89	6.47	0.67
Group X	32.13	6.47	0.67
<b>Truck Drivers</b>			
Group I	14.76	6.25	0.67
Group II	15.00	6.25	0.67
Group III	15.50	6.25	0.67
Group IV	15.51	6.25	0.67
Group V	15.60	6.25	0.67
Group VI	15.75	6.25	0.67
Group VII	15.90	6.25	0.67
Group VIII	16.11	6.25	0.67
Group IX	16.32	6.25	0.67

**NOTE: All Contractors are required to pay SUBSISTENCE, ZONE AND INCENTIVE PAY according to the particular trade. Details are located in a PDF attachment at [WWW.DWS.STATE.NM.US](http://WWW.DWS.STATE.NM.US). Search Labor Relations/Labor Information/Public Works/Prevailing Wage Rates.**

**COMMODITY CODES:**

Effective July 1, 2016, each state agency and local public body shall use the standardized classification codes developed by the state purchasing agent. (NMSA 1978 13-1-30.1)

Applicable classification codes for this proposal are:

5-DIGIT CODE	ITEM DESCRIPTION
90930	Building Construction

## LOVINGTON FIRE STATION #2

### SECTION 012300 – MODIFICATIONS AND ALTERNATES

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for modifications and alternates.

##### 1.2 DEFINITIONS

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

##### 1.3 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
  - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

## LOVINGTON FIRE STATION #2

### PART 2 - EXECUTION

#### 2.1 SCHEDULE OF PLAN AND SPECIFICATION MODIFICATIONS

- A. Modification No. # 1 Chain link Security door
1. Base Bid: **Do not Include** Chain link security door as specified in Section 08 36 13. Refer to plans, sections and door schedule, remove from scope of work Eight (8) chain link security doors at each apparatus bay door.
- B. Modification No. #2: Audio - Visual.
1. Base Bid: **Do not Include** Audio – Visual work as specified in Section 115200 ELECTRONIC DIGITAL SYSTEMS.
    - a. This specification to remain in project manual for reference only. Provide power and electrical as noted on other electrical sheets.
- C. Modification No. # 3 Pre-finished metal wall panel system
1. Base Bid: **Do not Include** pre-finished metal wall panel system as described in drawings and Specification section 07 42 13. This includes all metal wall panels on all walls surfaces of the building. This includes, associated 1” continuous z-girts and other miscellaneous work. This does not include metal soffit panels, fascia panels or roof edge flashing or rigid thermal insulation as specified in section 07 21 00 or Fluid-Applied Membrane Air Barrier.
  2. Provide water-drainage exterior insulation and finish system (EIFS). EIFS system to be Sto-Essence DPR finish with standard mesh or equal. Water proof coating to be Sto Gold coat or as required by EIFS manufacture. Color: standard finishes, Texture: Standard finishes.
  3. Provide three EIFS color finishes. Similar to Sky Blue, Teal, and regal blue as noted on sheet A202. Provide EIFS color pattern as shown and designated by the three colors shown. Provide V-groove reveal at 24” horizontally and vertically between each change in color. Note that horizontal lines shown on sheet A202 are every 12”

#### 2.2 SCHEDULE OF ALTERNATES

- A. Alternate No. #1: Security Access Control System
1. Base Bid: **Do not Include** Security Access Control System as specified in Section 28 10 00
  2. Alternate: **Include** Security Access Control System as specified in Section 28 10 00
    - a. This alternative includes material cost, receiving, handling, and installation and Contractor overhead and profit.
    - b. Unit price for this alternative has been provided at \$32,938. If alternate exceeds this amount provide revised total amount as alternate.
- B. Alternate No. # 2 Steel Framed canopy
1. Base Bid: **Do not Include** steel framed canopy in its entirety. This includes structural concrete footings, steel frame, concrete block work, metal roofing and miscellaneous work associated with canopy. This includes any gas lines, electrical work, fixtures, etc.

## LOVINGTON FIRE STATION #2

- C. Alternate: **Include** steel framed canopy in its entirety as described in plans and specifications. This includes structural concrete footings, steel frame, concrete block work, metal roofing and miscellaneous work associated with canopy. This includes any gas lines, electrical work, fixtures, etc
- D. Alternate No. # 3: Video Surveillance System
1. Base Bid: **Do not Include** Video Surveillance System as specified in Section 28 10 00
  2. Alternate: **Include** Video Surveillance System as specified in Section 28 10 00
    - a. This alternative includes material cost, receiving, handling, and installation and Contractor overhead and profit.
    - b. Unit price for this alternative has been provided at \$37,155. If alternate exceeds this amount provide revised total amount as alternate.
- E. Alternate No. # 4 Ornamental welded wire fence and site concrete unit masonry
1. Base Bid: **Do not Include** Ornamental welded wire fence per specification section 32 31 16 and concrete unit masonry site wall. Refer to sheet A543. Remove all ornamental welded wire fence panels, posts and footings. Remove all concrete unit masonry walls and foundations. This alternate includes all miscellaneous material and work associated to the ornamental welded wire site fence and concrete unit masonry site wall. This alternate does not include steel gates, bollards, card readers or other concrete work.
  2. Provide standard galvanized chain-link fence in all locations and in a configuration and dimensions as illustrated on sheet A543. Where ornamental welded wire fence or CMU site wall is shown provide standard galvanized chain-link fence, fence posts, foundations and all miscellaneous material. Fence height to be 6'-0" as noted.
  3. Alternate: **Include** works shown on sheet A543 as noted. Provide ornamental welded wire fence and concrete unit masonry site walls as noted.
- F. Alternate No. #5: US Digital Designs Dispatch System.
1. Base Bid: **Do not Include** US Digital Designs Dispatch System as specified in Section 28 10 00.
  2. Alternate: **Include** US Digital Designs Dispatch System as specified in Section 28 10 00.
    - a. This alternate includes material cost, receiving, handling, and installation and Contractor overhead and profit.
    - b. Unit price alternate has been provided at \$140,000. If alternate exceeds this amount provide revised total amount as alternate.
- G. Alternate No. # 6 Asphalt Pavement
1. Base Bid: **Do not Include** concrete pavement in all locations except drive apron with street. Refer to note 2 to sheet CS101. In all locations except the entry and exit drive aprons with street change note 2 "concrete pavement per detail 2, sheet CS501" to note 1 "asphalt pavement per detail 1, sheet C501"
  2. Alternate: **Include** concrete pavement in all locations noted on drawings. Refer to note 2 to sheet CS101. In all locations where noted 2, provide "concrete pavement per detail 2, sheet CS501"
- END OF SECTION 012300





# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER  Broker's Name and Address	CONTACT NAME:	
	PHONE (A/C, No. Ext):	FAX (A/C, No):
E-MAIL ADDRESS:		
INSURER(S) AFFORDING COVERAGE		NAIC #
INSURED  Insured's name and Address	INSURER A :	
	INSURER B :	
	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

**COVERAGES**

CERTIFICATE NUMBER:

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
	<b>GENERAL LIABILITY</b> <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC			Sample			EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 300,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000
	<b>AUTOMOBILE LIABILITY</b> <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS			Sample			COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
	<input checked="" type="checkbox"/> <b>UMBRELLA LIAB</b> <input type="checkbox"/> <b>EXCESS LIAB</b> <input type="checkbox"/> DED <input checked="" type="checkbox"/> RETENTION \$			Sample			EACH OCCURRENCE \$ 1,000,000 AGGREGATE \$
	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below			Sample			<input type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Name and Address of Project

**CERTIFICATE HOLDER****CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

**Geotechnical Soils Investigation  
For  
City of Lovington Fire Station #2 on 17<sup>th</sup> Street  
in  
Lovington, New Mexico**

**March 29, 2017**

**Prepared For:  
WDG Architects  
% Joseph Fuemmeler, AIA**

**Dyess-Peterson Testing Laboratory, Inc.  
Texas Registered Engineering Firm F-1773  
1700 S.E. 22<sup>nd</sup> Avenue  
Amarillo, Texas 79103  
(806) 372-4911 (Office)  
(806) 372-5552 (Fax)**

**Report No. 2588**

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March 29, 2017

WDG Architects  
1014 S. Main Street, Suite A  
Las Cruces, New Mexico 88005

Attn: Mr. Joseph Fuemmeler, AIA

Subject: Geotechnical Soils Investigation  
**CITY OF LOVINGTON FIRE STATION #2 ON 17<sup>TH</sup> STREET**  
Lovington, New Mexico  
DPTL Report No. 2588

Dear Mr. Fuemmeler:

Dyess-Peterson Testing Laboratory, Inc. (DPTL) has completed the authorized subsurface exploration and geotechnical engineering report for the above mentioned project as authorized by yourself on February 21, 2017. The following report briefly presents our understanding of the project, reviews our exploration procedures, describes existing site and subsurface conditions, and summarizes our evaluations, conclusions, and recommendations relative to the geotechnical aspects of the project.

The primary issue at this particular site is the need to provide in-situ soils conditions as they relate to the design of structural foundations for the proposed fire station facility project. The most common methods of construction practices for a project of this nature are discussed in detail in the attached report.

If you have any questions regarding this report or we can be of further service please do not hesitate to call us at (806) 372-4911. We look forward to working with you in the future.

Sincerely,  
**Dyess-Peterson Testing Laboratory, Inc.**



Michael D. Copeland, P.E.  
Texas License No. 72032  
Texas Engineering Firm No. F-1773



*Robert C. Lydick*  
Robert C. Lydick, P.E.

Geotechnical Soils Investigation  
**CITY OF LOVINGTON FIRE STATION #2 ON 17<sup>TH</sup> STREET**  
Lovington, New Mexico  
DPTL Report No. 2588

**GENERAL SUMMARY**

The following is a brief summary of the information detailed in the following report. All issues summarized in this section are discussed in more detail in the report. This report must be read in its entirety prior to the implementation into design and construction of this project.

1. DPTL has performed four (4) geotechnical borings at this site for design. The subject site is located East of 17<sup>th</sup> Street between the North and South alleyways of W. Dogwood Avenue in Lovington, Lea County, New Mexico. The borings were proposed to be extended to a depth of 5 or 20 feet below existing grade depending on boring in question. However, due to encountering a strata of hard, dense rock borings #1 & #3 were terminated at the 3' depth and borings #2 & #4 at the 2' depth. The borings were extended utilizing a Geoprobe 7822 DT drilling unit.
2. According to the United States Department of Agriculture (USDA) "Soil Survey for Lea County" the subsurface materials encountered at this site should be Kimbrough-Lea complex, 0 to 3 percent slopes. The parent material for the Kimbrough-Lea complex consists of loamy eolian deposits derived from sedimentary rock. The typical profile of the Kimbrough-Lea complex from the surface to 3 inches is gravelly loam, 3 to 10 inches is loam, and 10 to 80 inches is cemented material. This soil has a natural drainage class of well drained. This soil is not flooded or ponded. The soil has a shrink-swell potential of low.
3. Groundwater was not encountered on the drilling tools (augers) or in the open boreholes upon completion of the four (4) borings drilled. Groundwater at this deepest 3' depth is uncommon for this area and is not expected to be encountered even during wet seasons. No excessive moistures were encountered near the surface during drilling at this site based on the soil types.
4. Laboratory test results indicate that the soils encountered in the upper three (3) feet of the four (4) borings are low to moderate in plasticity. A Potential Vertical Rise (PVR) of less than 0.50" in the top three (3) feet of existing soils has been estimated for the current conditions and anticipated for the fire station facility project not including design loads for the proposed structure if no improvements are made to the existing soils or if the soils are allowed to become saturated over a depth of ten feet from the existing moisture content.

These and other design and construction recommendations are discussed in more detail in the attached report.

GEOTECHNICAL SOILS INVESTIGATION  
CITY OF LOVINGTON FIRE STATION #2 ON 17<sup>TH</sup> STREET  
Lovington, New Mexico

**1.0 INTRODUCTION**

**1.1 Project Information**

This report presents the findings of our subsurface exploration and geotechnical engineering evaluation for the proposed fire station facility. The subject site is located East of 17<sup>th</sup> Street between the North and South alleyways of W. Dogwood Avenue in Lovington, Lea County, New Mexico. Information for this project was provided by Joseph Fuemmeler, AIA of WDG Architects and Stubbs Engineering personnel.

This project will consist of the construction of a one (1)-story but varying heights, 11' or 20', fire station facility. The fire station facility will be approximately 10,000 square feet (ft<sup>2</sup>) in size. Exterior structural framing for the structure will be of Concrete Masonry Unit (CMU) block wall for the apparatus bay area and lightweight metal stud framing for the residential portion. The interior framing will consist of lightweight metal studs and sheetrock. The exterior finish will be a combination of CMU veneer and metal panels. The roof system for the structure will be a Thermoplastic Polyolefin (TPO) membrane. Once the vegetation and gravel have been removed approximately 30-36 inches of select fill material placement is estimated in order to provide proper site drainage and establish the 3936.0' finished floor elevation for the structure. Along with the proposed structure will be the associated drive/parking areas which we believe will be Portland Cement Concrete.

Design loading provided at the time of the report completion indicated a value of 2,000 pounds per linear foot (plf) for the wall supporting footings and column loads of 40 kips.

**1.2 Purpose of Exploration**

The objective of this exploration was to explore the general subsurface conditions at the site and to evaluate and analyze these conditions as they relate to foundation design and construction. The field exploration has been accomplished by securing subsurface soil samples from widely spaced test borings performed across the expanse of the site. The analyses have been used to develop geotechnical engineering design parameters for the support foundations and slab to be constructed for the project.

Recommendations provided in this report have been developed from information obtained in the test borings which depict subsurface conditions only at the specific boring locations and at the particular time designated on the logs. Subsurface conditions at the other locations may differ from those observed at the boring locations. This scope of work is not intended to fully define the variability of subsurface materials which may be present on the site. The nature and extent of variations may not become evident until construction. If significant variations then appear our office should be contacted to re-evaluate our recommendations after performing on-site observations and tests.

Recommendations presented in this report should not be used for design of any other structure except that specifically described in this report. Subsurface conditions can change with passage of time. Recommendations contained herein are not considered applicable for an extended period of time after the completion date of this report. It is recommended that our office be contacted for a review of the contents of this report for construction commencing more than one (1) year after completion of this report.

If the client notes any deviation from the facts about project characteristics our office should be contacted immediately since this may materially alter the recommendations. If the recommendations stated in this report are not followed, Dyess-Peterson Testing Laboratory, Inc. (DPTL) is not responsible for damages resulting from workmanship of designers or contractors and it is recommended that DPTL be retained by the owner to verify work is performed in accordance with plans and specifications.

### **1.3 Scope of Exploration**

The scope of work included a site reconnaissance, soil test borings, sampling, laboratory testing, engineering evaluation of the field and laboratory data, and the preparation of this report. Specifically, this report addressed the following:

1. Description of the existing site conditions.
2. A description of the area, site evaluation and subsurface conditions.
3. Subsurface soil, rock stratigraphy and groundwater observations.
4. Recommendations for foundation design (structure and pavement) including allowable bearing capacities, estimated bearing levels, and PVR. Frost penetration depth is also provided.
5. Recommendations for structural support below existing soil grade.
6. Recommendations for site preparation, earthwork, groundwater, proof rolling control as required. This includes a maximum Plasticity Index for select fill materials and analysis of the effect of weather and construction equipment on soil during construction.
7. Analysis of soils to evaluate presence of potentially expansive or deleterious conditions.

## **2.0 INVESTIGATION PROCEDURES**

### **2.1 Visual Inspection**

The site and surrounding areas were evaluated visually by an employee of DPTL. The observations were utilized during the determination of recommendations and in relating known geologic conditions in the area to site specific conditions.

### **2.2 Scope of Field Investigation**

The four (4) geotechnical borings were advanced at the approximate locations shown on the attached Location of Borings Map (Figure 2 in Appendix A). Exact sea-level elevations were not provided for the boring locations so an elevation of 3933.0' provided by WDG Architects personnel for existing soil grade was utilized for each boring location due to the levelness of the site and the elevation of each boring location visibly being nearly the same. There were no restrictions encountered by underground utilities as they were located and cleared before drilling began by New Mexico 811 (NM811) as arranged by DPTL personnel. Please note, the borings were advanced in the approximate locations shown on the Location of Borings map. The boring locations were determined by Stubbs Engineering personnel but located in the field by Dyess-Peterson personnel based on the site map provided by Stubbs Engineering personnel.

Representative soil samples of the subsurface materials were obtained utilizing a split-spoon sampling method as per ASTM D1586. A standard 2-inch O.D. split-spoon sampler was driven 18-inches into subsurface materials using a 140-pound hammer with a fall of 30-inches to obtain relatively undisturbed samples at selected depths during drilling procedures. The number of blows to drive the split-spoon sampler the final 12-inches of penetration, known as N-Value, is recorded in the appropriate column on the log. The samples were removed from the sampler and placed in sealable plastic bags to prevent moisture loss or gain and to be used in further testing. The borings were backfilled with on-site materials and bentonite pellets upon completion.

The soil classifications and descriptions are based on visual examination, as outlined in ASTM D2487-92, the Unified Soil Classification System in conjunction with Munsell Soil Color Charts, and should be considered approximate. Subsurface materials encountered are recorded on the boring logs, which depict soil classifications, descriptions, and penetration resistance and are included in Appendix B. The soil stratigraphy lines shown on the boring logs represent the approximate boundary between soil types and the transition may be gradual.

### **2.3 Scope of Laboratory Testing**

Minus #200 sieve analysis (ASTM D1140-92), existing moisture content (ASTM D2216), and Atterberg Limits test (ASTM D4318-84) were performed on selected samples to assist in classification of subsurface materials and determination of engineering characteristics of the materials. All laboratory results are described on the Log of Borings located in Appendix B.

### **3.0 SITE AND SUBSURFACE CONDITIONS**

#### **3.1 Site Descriptions**

The subject site is located on the East side of 17<sup>th</sup> Street between the North & South alleyways of W. Dogwood Avenue in Lovington, Lea County, New Mexico.

Ground vegetation on the subject site consists of native grasses and weeds with large areas of bare soils. Portions of the site are covered with pea gravel. Also on the site are four (4) stockpiles of rock & soil all of which will have to be removed prior to construction.

The topographical conditions at this site appear to be fairly level thus resulting in the site being poorly drained in its existing state.

#### **3.2 Subsurface Conditions**

All data interpreted from the geotechnical borings is detailed in the Log of Borings located in Appendix B. As previously mentioned, the location of the test borings are pictured on Figure 2 in Appendix A.

The subsurface conditions discussed in the following paragraphs and those depicted in the Log of Borings are based solely on the information obtained from the geotechnical borings drilled at the site and represents an estimate of the subsurface conditions based on interpretation of the boring data using normally accepted geotechnical engineering judgements.

The soil borings encountered only Clayey Sand soils. This soil type is discussed in the following paragraph. No excessive moisture contents were encountered near the surface based on the soil type. Also, as mentioned previously hard, dense rock was encountered at the 2' or 3' depth depending on boring in question thus causing auger refusal and boring termination. The soils appear to be in a dry moisture state from the surface to 3' depth in the upper 3' of the borings drilled.

##### **3.2.1 Clayey Sand (SC)**

Clayey Sands were encountered in borings #1 and #3 from the surface to full 3' depth and in borings #2 and #4 from the surface to full 2' depth. The colors of this soil were Brown, Pinkish White, Light Brown and Very Pale Brown.

The Plasticity Index (PI) of the Clayey Sands ranged from 8 to 13 which results in a degree of plasticity of lot to moderate while the moisture contents ranged from 2.7 to 9.6 percent with the density varying from dense to very dense.

The Standard Penetration Test value (blow counts) for the Clayey Sands existing in the borings varied from 40 blows for 12 inches of penetration to 82 blows for 12 inches of penetration.

##### **3.2.2 Rock**

As mentioned earlier, a hard, dense rock strata was encountered in all four (4) borings at depths of either 2' or 3' depending on boring in question thus causing auger refusal. Signs (pieces) of the rock were evident in shallower depths. It would not be unexpected if rock was encountered at shallower depths than what was encountered during our drilling/sampling process. If the solid rock stratas are encountered at depth shallower than what was encountered during our drilling/sampling process then the excavation of the rock might be required in order to construct the support foundations.

##### **3.2.3 Groundwater**

As mentioned previously, groundwater was not noted on the drilling tools (augers) or in the open boreholes upon completion of the four (4) borings drilled. Groundwater at this deepest 3' depth is uncharacteristic for this area. It is unlikely that groundwater would be encountered during excavations such as turn-down footings, spread footings or spot column spread footings for the building which will be detailed later in this report.

The amount of water is expected to vary with seasonal rainfall, other climatic conditions, surface runoff, permeability of on-site soils, continuity of pervious soils, irrigation practices, and other factors. Once again, the excavation of turn-down footings, spread footings or spot column spread



footings which will be detailed later in this report are not expected to be affected by any groundwater.

These observations do not constitute a groundwater study nor was such a study authorized as a part of the scope of investigation. Several days of observation will be required to evaluate actual groundwater levels within the depth explored.

### 3.2.4 Frost Depth

The design frost depth for Lea County, New Mexico is 12 inches. Because of this a minimum foundation depth of 18 inches is recommended.

### 3.2.5 Seismic Zone

According to the 2012 International Building Code (IBC) the site soil profile based on existing soil properties to the total depth of the borings would be  $S_c$  for the surface to 3' depth therefore a site soil profile of  $S_c$  should be utilized for design.

### 3.2.6 Settlement

Total settlement for this project should be of the magnitude of 1" or less if constructed as recommended with differential settlement estimated to be as low as 50% of total settlement and probably will not exceed 75% of total settlement. Approximately 50-60% of the expected settlement could occur during construction.

### 3.2.7 Shrink/Swell Potential

The tendency for a soil to shrink and swell with changes in soil moisture content is a function of the clay content and the type of clay material. These are reflected in soil consistency as indicated by the Liquid Limit and Plasticity Index of the Atterberg Limits tests. A generalized relationship between shrink/swell potential and the soil Plasticity Index (P.I.) is shown as follows:

#### General Relationship Between P.I. and Shrink/Swell Potential

P.I. Range	Shrink/Swell Potential
0 to 15	Low
15 to 25	Medium
25 to 35	High
>35	Very High

The soils at this site possess a low shrink/swell potential.

Swelling Characteristics: An estimate of the magnitude of the possible ground surface movement caused by shrinking and swelling of the clay containing soils has been made through the use of the PVR procedure. As previously mentioned a PVR of less than 0.50" is expected if no modifications are made to the existing soils. The anticipated ground movements due to the possible swelling of the underlying soils at the site were estimated using existing moisture conditions. It is still recommended that the final grade be such that positive drainage exist away from the foundations. This could be achieved by select fill material placement. It is estimated that after the vegetation and gravel have been removed that 30-36 inches of select fill material placement will be necessary, based on the existing ground elevations, to achieve final soil elevation in order to provide positive drainage away from the structure. We estimate the PVR value will be reduced by about 1/8" for each foot of select fill material placed above the existing ground surface.

The low to moderate clay containing soils in the upper 3' of the four (4) borings have potential for volume change with changes in the soils moisture content. The volume change is normally evidenced by the heaving and cracking of the concrete floor slab and/or foundations. The PVR at this site is on the order of less than 0.50" assuming the in-place soils are allowed to increase in moisture content from an existing condition to a relatively wet condition over a depth of 10 feet. It is not uncommon to assume differential movement as half of the PVR. Controlling the moisture content variation of a soil will reduce its variation in volume. A number of measures may be increased to attain a reduction in subsoil moisture content variations, thus reducing the shrink/swell potential. Some of the measures are listed below:

- 1) During construction, a positive surface drainage scheme should be implemented to prevent ponding of water on the subgrade.
- 2) The structure subgrade should not be allowed to dry out.

- 3) Positive surface drainage should be maintained around the structure through a roof/gutter system connected to piping or a paved surface around the structure, transmitting water away from the foundation perimeter, in addition to positive grades sloping away from the foundation. Proper grading and drainage in the foundation areas to prevent ponding of water is essential. In no instance should water be allowed to pond in the foundation vicinities either during or after construction. The final ground surface should be sloped down and away from the edge of the foundations at a minimum of five percent (5%) slope (six inches drop in ten feet of run) to make sure water drains away from the foundations area during the life of the structure. The slope should extend at least ten feet from the foundation perimeter. Splash blocks are also required for hose bibs and water spigots.
- 4) Utility trenches should be backfilled with borrow materials having PI values of 15-20 to reduce the potential of the trenches acting as aqueducts and transmitting water beneath the structure due to excessive surface water infiltration. Another option would be the use of flowable fill.
- 5) Shrubbery and flower beds (if any) surrounding the structure should be planned to insure that bedding soils drain away from the structure. All planters should have impermeable bases with weep holes directed away from the structure.
- 6) A paved surface (mow strip) should extend beyond the structure line a minimum of 3' to serve as a barrier to soil moisture evaporation and infiltration. However, such surfaces should be structurally isolated from the foundation to prevent the transfer of stresses to the foundation from the paved surfaces.
- 7) Trees or other vegetation (if any) whose root systems have the ability to remove excessive moisture from the subgrade and foundation soils should not be planted next to the structure. Planted and landscaped areas adjacent to the structure should not be covered with impermeable sheeting, commonly used to reduce weed growth. Trees and shrubbery should be kept away from the exterior edge of the foundation elements a distance of at least equal to 1.5 times their expected mature height. Trees can remove soil moisture through their root system, therefore creating significant soil moisture differences between the structure and consequently aggravating expansive soil activity. Root growth beneath a foundation can also cause damage by pushing against a foundation element.
- 8) Differential movements should be expected between the foundation and adjoining structure, such as sidewalks or other appurtenances. Flexible joints should be used which account for such movement without adversely affecting the aesthetics and integrity of the joint and without allowing stress transfer.
- 9) Irrigation systems for landscaping around the foundations should be designed for minimal water use. No saturation of soils or excessive drying should be allowed to occur.

This method utilizes correlations between Atterberg Limits test data to estimate the swell potential and as such, the result must be considered as giving approximate values of the shrink-swell potential. It should be noted that these PVR estimates are indicative of the relative magnitude of probable movement under seasonal moisture changes in the soil moisture content. Movements in excess of these values may be expected if increases in soil moisture occur as the result of broken water or sewer lines or improper drainage of surface water. The client is cautioned that the strength of soils can vary significantly with moisture content. When soils are dry the strength can be relatively high while the soils can lose their strength when they are wet.

Care must be taken not to create an excavation which traps water. Once again it is our belief and recommendation that select fill placement would need to be utilized to achieve final soil grade to provide positive drainage away from the foundation. The select fill material should extend out from foundation elements a distance at least equal to 5 feet. The select fill material should meet the specification and compaction requirements provided in a following subsection. Select fill material not under the structure should be covered around the structure perimeter with a relatively

impermeable cover to minimize water infiltration into the select fill material. It is highly recommended that positive drainage exist away from the structure in order to prevent subjecting the foundation to a moisture increase. It is also important to prevent a significant moisture decrease. This would result in a shrinkage effect.

#### **4.0 DESIGN RECOMMENDATIONS**

The following design recommendations have been developed on the basis of the previously described project characteristics and subsurface conditions encountered. If there are any changes in the project criteria, this office should be notified immediately and a review made by DPTL to determine if any modifications in our recommendations would be required. The following conclusions and recommendations are based on our observations at the site, interpretation of the field data obtained during this exploration, and our experience with subsurface conditions. Subsurface conditions in unexplored locations may vary somewhat from those encountered in our investigation. If the structure location is changed from the previously mentioned understood proposed location, we request that we be notified immediately so that we may reevaluate our recommendations.

##### **4.1 Proposed Construction**

As mentioned previously, our understanding and knowledge of this project is based on information provided by Joseph Fuemmeler, AIA of WDG Architects and Stubbs Engineering personnel. We were issued a site plan of this project prior to drilling and sampling.

We understand this project consists of the construction of structural foundations for the fire station facility structure. It is our belief that the typical construction of a structure of this nature should be supported by turn-down or spread footings for the exterior walls and spot column spread footings for the columns. Information concerning structural loads provided at the time this report was prepared indicated a value of 2,000 plf for the walls and 40 kips for columns.

##### **4.2 Turn-Down Footings, Spread Footings or Spot Column Spread Footings**

For maximum sustained load to be 2,000 plf for the walls and 40 kips for the columns the turn-down footings, spread footing and spot column spread footings for the fire station facility structure may be founded at elevation 3934.0' and be sized based on an allowable in-place bearing capacity value of 2000 psf or at elevation 3931.00' and be sized based on an allowable in-place bearing capacity value of 3000 pounds per square foot (psf).

##### **4.3 General Conclusions**

The most significant soil related factors for design of the light to moderately loaded structure at this site are the bearing capacities of the soil layers and their expansion. The soils present at the site are low to moderate in plasticity and shallow foundations supported on these soils could be subject to movements due to moisture fluctuations in these soils. The most positive means to reduce the potential for foundation movement would be to support the proposed structure on a foundation system bearing below the freeze/thaw zone which for this area is considered 12-inches and on the recommended select fill material. It is recommended that the minimum depth for a foundation bearing depth be 18-inches below the finished exterior grade to protect against freeze/thaw only.

#### **5.0 CONSTRUCTION RECOMMENDATIONS**

All areas around the structure should be designed to prevent migration of water into the soils beneath the structure and other flatwork sensitive to movement. No excessive saturation or drying of soils around the foundations should be allowed to occur.

##### **5.1 Site Preparation**

- A. This site should be prepared by removing and clearing any grass, weeds, stock-piles, loose soils and organic topsoils.

##### **5.2 Subgrade Preparation**

- A. The top 6-inches of in-place soil should be plowed or scarified, processed to near optimum moisture content ( $\pm 2\%$ ), and compacted to at least 95% of maximum dry density as determined by a standard proctor (ASTM Designation D698) when tested in accordance with ASTM Designation D6938.
- B. The site should be proof rolled to detect soft areas which should be removed and properly replaced, processed, and recompacted to 95% of standard proctor maxi-

imum dry density (ASTM D698) and  $\pm 2\%$  of optimum moisture content when tested in accordance with ASTM Designation D6938.

- C. Subgrade should be tested by a qualified laboratory technician under the supervision of a licensed professional engineer specializing in geotechnical studies.

### 5.3 Foundation Preparation

- A. All select fill material should have a Plasticity Index of 4-15 and should be placed in 8-inch loose to 6-inch maximum compacted lifts. All soil for select fill material should be free of large rock (larger than 2") or other deleterious material and should be processed to near optimum moisture content ( $\pm 2\%$ ) and compacted to a minimum of 95% of maximum dry density as determined by a standard proctor (ASTM Designation D698) and when tested in accordance with ASTM Designation D6938. Each lift must be tested and accepted prior to placing the next lift. The Plasticity Index and Liquid Limit of material used as select, less-expansive fill should be routinely verified during fill placement using laboratory tests. Visual observation and classification should not be relied upon to confirm the material to be used as select, less-expansive fill satisfies the above Atterberg Limits criteria.
- B. The site should be proof rolled to detect soft areas which should be removed and properly replaced to 95% of standard proctor maximum dry density (ASTM D698) and  $\pm 2\%$  of optimum moisture content when tested in accordance with ASTM Designation D6938.
- C. Due to the placement of select fill material, differing amounts of settlement can occur. This settlement can be as low as  $\frac{1}{2}$  percent ( $1/2\%$ ) for shallow amounts less than 3 feet to as much as  $1 \frac{1}{2}$  percent ( $1 \frac{1}{2}\%$ ) for thicknesses greater than 3 feet. Due to the amount of soil placement the designer should take into account measures necessary to reduce the amount of settlement.
- D. Each lift should be tested by a qualified laboratory technician under the supervision of a licensed professional engineer specializing in geotechnical studies.
- E. The top 2-inches of fill should be sand, or other free draining soil, in the area beneath the slab. The sand cushion or other free draining soil, should be damp and compacted prior to placing the fresh concrete, and should have a Plasticity Index of 8 or less.
- F. Structural concrete should be placed as soon as possible when the soil preparation is completed.

### 5.4 Recommended Minimum Sampling and Testing Frequencies

It is recommended that the site preparation, foundation construction, floor slab construction and pavement sections be monitored by the geotechnical engineer or his representative. Following are recommended minimum sampling and testing frequencies.

#### Earthwork

- At least one moisture-density (proctor) test, Atterberg Limits test and percent finer than #200 sieve test should be performed per each soil type such as subgrade, and select fill material.
- In the proposed structure areas at least 1 density and moisture content test per 2,000 square feet of surface area should be performed on the subgrade soils and at least 1 density and moisture content test per 2,000 square feet of surface area should be performed for each compacted 6-inch thick layer of select fill material. Testing backfill trenches should be at least 1 density and moisture content test per 100 linear feet of trench per 6-inch compacted backfill thickness.
- A minimum of five (5) density and moisture content tests should be performed in the proposed structure area on the subgrade soils and a minimum of five (5) density and moisture content tests should be performed per 6-inch compacted thickness of select fill material in the structure area. Testing of backfilled trenches should be at least 1 density and moisture content test per 100 linear feet of trench per 6-inch compacted backfill thickness.

- It is imperative that a qualified field technician be on-site during all soil processing and placement.

#### Concrete

- At least 1 slump, air content and temperature test should be performed per 50 cubic yards of each type of concrete placed each day including when concrete test cylinders are molded.
- At least 1 set of 4 concrete test cylinders should be molded for each type of concrete per 50 cubic yards or fraction thereof placed in a day.
- Each set of cylinders should be tested for compressive strength with 2 of the cylinders tested at 7 days and 2 of the cylinders tested at 28 days.
- Reinforcing steel should be checked for size of placement prior to concrete placement.

#### Foundations

- The dimensions of each foundation including reinforcing steel size and placement should be checked.
- The bearing material at each foundation should be checked to verify that the materials are suitable for foundation support.

### **6.0 PAVEMENT**

The material encountered near the existing ground surface will probably constitute the subgrade for the parking and drive areas if the civil drawings do not include fill material over the pavement areas of the site before flexible base is placed. It is our belief fill material will not be required over the site for the pavement areas to achieve proper drainage due to the existing grades. Therefore, it is recommended these materials need not be improved prior to construction of the pavement areas. If, as not expected, fill material placement is necessary it is recommended that it be select fill type material. If it is not select fill type material, the top 6" (before flexible base) should be stabilized with enough Cement Kiln Dust (CKD) or lime to reduce the PI to 15 or less. Due to the wide spacing of the borings, division of the site into areas with similar subgrade conditions was not possible. Delineation of areas with similar subgrade conditions, if required, should be performed during construction after the subgrade material has been exposed. The specific type of improvement procedures required in given drive and parking areas will be dependent upon the type of material present after final elevation has been achieved.

Recommendation for the required pavement thickness are based only on the physical and engineering properties of the materials and conventional thickness determination procedures. Pavement joining the structure should be constructed with a curb and the joint between the structure and curb should be sealed. Related civil design factors such as subgrade drainage, shoulder support, cross-sectional configurations, surface elevations, joint design and environmental factors will significantly affect the service life and must be included in preparation of the construction drawings and specifications, but were not included in the scope of this study. Normal periodic maintenance will be required for all pavement to achieve the design life of the pavement system.

If after achieving final soil elevation in the parking and drive areas before flexible base placement the soils possess PI values greater than 15, it is recommended the exposed surface of the soil be scarified to a depth of 6 inches and mixed with hydrated lime or CKD. The actual amount of lime or CKD required should be confirmed by additional laboratory testing but should be enough to reduce the PI to less than 15.

1. It is recommended the stabilization procedures extend at least 1 foot beyond the edge of the pavement to reduce effects of seasonal shrinking and swelling upon the extreme edges of pavement. The soil stabilization mixture should be compacted to at least 100 percent of standard proctor maximum dry density (ASTM D 698) and within the range of 0 to +4 percentage points above the mixture's optimum moisture content. Joints in concrete pavement should not exceed 15 feet.

2. In all areas where stabilization is used to stabilize the final soil, routine Atterberg Limit tests should be performed to assure the resulting Plasticity Index of the mixture is at/or below 15.

6.0 inches  
4.0 inches  
6.0 inches

Light Duty PCC Pavement  
Portland Cement Concrete (15-foot joint spacing)  
Flexible Base – NMDOT Division 303  
Scarified, Stabilized (if necessary) and Recompacted Subgrade

OR

8.0 inches  
10.0 inches  
6.0 inches

Heavy-Duty PCC Pavement (Truck Traffic Area)  
Portland Cement Concrete (15-foot joint spacing)  
Flexible Base - NMDOT Division 303  
Scarified, Stabilized (if necessary) and Recompacted Subgrade

### 6.1 Portland Cement Concrete Specifications

Pavement should be specified, constructed and tested to meet the following requirements:

1. Portland Cement Concrete: NMDOT Division 450. Specify a minimum compressive strength of 4,000 pounds per square inch (psi) at 28 days. Concrete should be designed with  $5 \pm 1$  percent total air content.
2. The subgrade should be compacted to at least 100% of standard proctor maximum dry density (ASTM D698) and within  $\pm 2\%$  if not stabilized or  $0$ - $+4\%$  if stabilized of the material's optimum moisture content.
3. The flexible base should be placed in two (2) equal lifts for the heavy-duty section but only one (1) lift for the light-duty. Each lift should be compacted to a minimum of 100% and within  $\pm 2\%$  of optimum moisture content as determined by ASTM D698. The first lift must be tested and accepted prior to placement of the next lift.

Pavement and other flat work will have the same potential for movement as slabs constructed directly on the existing soils. Therefore, good perimeter surface drainage with a minimum slope of 2 percent away from the pavement is recommended. Normal maintenance of pavement should be expected over the life of the structures. Pavement surfaces should be maintained to help minimize surface ponding and to provide rapid sealing of any developing cracks. These measures will help reduce infiltration of surface water downward through the pavement section.

### 7.0 EXCAVATION SAFETY CONSIDERATIONS

If utility trenches or other excavations extend to or below a depth of 5-foot below construction grade, the contractor or others shall be required to develop a trench safety plan to protect personnel entering the trench or trench vicinity. The collection of specific geotechnical data and the development of such a plan which could include designs for sloping, benching or various types of temporary shoring, is beyond the scope of the current study. Any such designs and safety plans shall be developed in accordance with current OSHA guidelines and other applicable industry standard. The soils at the depths needed for excavation are classified as cohesive. The maximum allowable slope for excavations less than 20-feet are 1H:1V for a short term.

It is important for the design geotechnical engineer to be allowed to observe the excavations to make a determination as to the quality and competency of the soil materials. If sandy or clayey material is observed not to be stable at a 1 horizontal to 1 vertical slope or if large pockets of non-cohesive soils are encountered, the excavations may require being sloped even more gentle. If any sloughing subsidence or tension cracks are observed in the soil, the contractor should stop all work and notify the design geotechnical engineer.

### 8.0 QUALIFICATION OF RECOMMENDATIONS

The recommendations in this report were developed from the information obtained from the test borings which give subsurface conditions only at the specified depths, the specified times of the boring logs and that there are no pre-existing deep excavated areas that have been backfilled on this site. It is also assumed that the moisture levels encountered at this site will not be permitted to materially increase over those shown on the logs. In addition, the laboratory test results for selected soil and rock samples relate only to the samples tested. Rock and soil conditions at other

locations may vary from the indicated conditions and the nature and extent of the variations may not become noticeable until the course of construction. If variations do appear, it will be necessary to re-evaluate the recommendations of this report after making notes of all the variations. Also, if any changes occur in the proposed construction, including site location, this office should be notified so a review can be made.

It is important that a geotechnical engineer be retained to review the specifications and plans and also for testing and observations during the foundation construction and earthwork phases of the proposed construction to help confirm the design requirements are fulfilled.

Our professional geotechnical services have been performed, our findings logged and our report prepared in accordance with generally accepted geotechnical engineering practices. This warranty is in lieu of all other written warranties either expressed or implied. This report shall not be reproduced except in its entirety and with the express written permission of Dyess-Peterson Testing Laboratory, Inc.

## **APPENDICES**

### **APPENDIX A – TEXT FIGURES**

Figure 1 Site Location Map  
Figure 2 Location of Borings Map

### **APPENDIX B – FIELD RESULTS**

Records of Subsurface Exploration Sheets  
Key to Symbols and Classifications – Soil and Rock



## **APPENDIX A – TEXT FIGURES**

Figure 1  
Figure 2

Site Location Map  
Location of Borings Map



**Figure 1**

**Site Location Map**

Project:

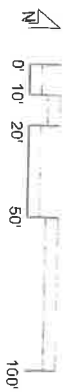
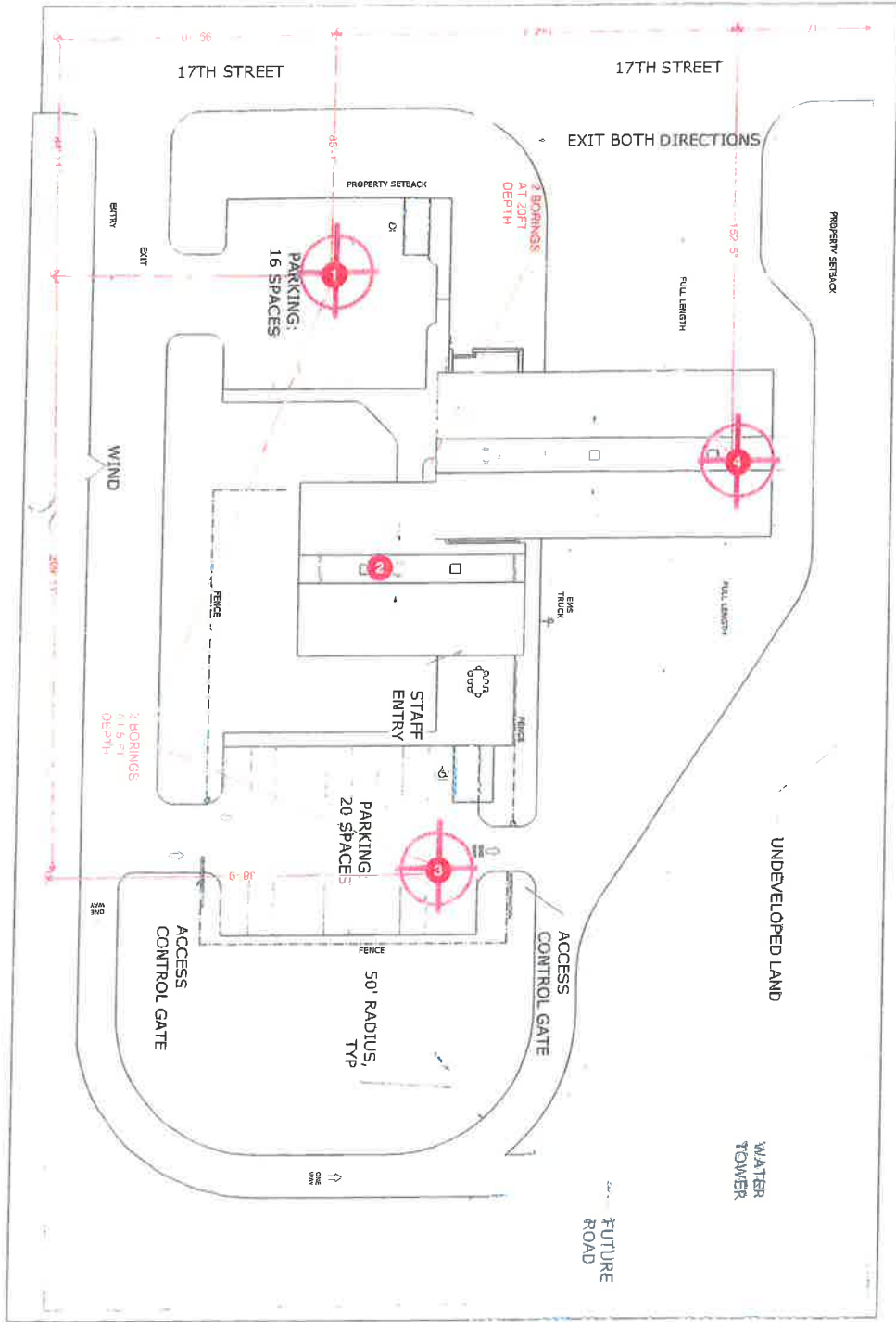
City of Lovington Fire Station #2 on 17<sup>th</sup> Street – Lovington, New Mexico

DPTL No:

2588



1 SITE PLAN  
A100 1/16" = 1'-0"



**A100**  
SHEET NO.  
Date: 11/16/2010  
Drawing No: 2010-07-16  
Scale: 1/16" = 1'-0"  
Author: [illegible]  
Overall



**FIRE STATION #2**  
ADDRESS



**Figure 2**  
Project:  
DPTL No.:

**Location of Borings Map**

City of Lovington Fire Station #2 on 17<sup>th</sup> Street – Lovington, New Mexico  
2588

## **APPENDIX B – FIELD RESULTS**

**Records of Subsurface Exploration Sheets  
Key to Symbols and Classification – Soils and Rock**











## LOVINGTON FIRE STATION # 2

### SECTION 011000 - SUMMARY

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Phased construction.
4. Work under separate contracts.
5. Access to site.
6. Coordination with occupants.
7. Work restrictions.
8. Specification and drawing conventions.
9. Miscellaneous provisions.

##### 1.2 PROJECT INFORMATION

###### A. Project Identification: Lovington Fire Station # 2.

1. Project Location: 1066-1081 North 17<sup>th</sup> Street, Lovington, New Mexico, 88260 .

###### B. Owner: City of Lovington

1. Owner's Representative: Terrance Lizardo.

###### C. Architect: Joseph Fuemmeler, WDG Architects., 1014 S. Main St., Las Cruces, NM..

##### 1.3 WORK COVERED BY CONTRACT DOCUMENTS

###### A. The Work of Project is defined by the Contract Documents and consists of the following:

1. New Fire Station with six (6) dorm rooms, day-room, kitchen and apparatus bay with four (4) pass-thru aisles.

###### B. Type of Contract.

1. Project will be constructed under a single prime contract.

## LOVINGTON FIRE STATION # 2

### 1.4 ACCESS TO SITE

- A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.
- B. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- C. Use of Site: Limit use of Project site to **work in areas** indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
  - 1. Limits: Confine construction operations to 40 feet beyond building perimeter; 15 feet beyond primary roadway curbs and main utility branch trenches; and 25 feet beyond constructed areas with permeable surfaces (such as pervious paving areas, and storm water detention facilities) that require additional staging areas in order to limit compaction in the constructed area.
  - 2. Driveways, Walkways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
    - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
    - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

### 1.5 WORK UNDER SEPARATE CONTRACTS

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.
- B. Concurrent Work: Owner **may award** separate contract(s) for the following construction operations at Project site. Those operations will be conducted simultaneously with work under this Contract.
  - 1. Off-site access road and utilities
  - 2. Utilities and surface improvements to adjacent roads and or alleys
  - 3. Special Systems

### 1.6 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.

## LOVINGTON FIRE STATION # 2

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of unless otherwise indicated.
1. Nonsmoking Building, Smoking in not permitted within the building or within 25 feet of entrances, operable windows, or outdoor air intakes.

### 1.7 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
  2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
  3. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meaning shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural and plural words shall be interpreted as singular where applicable as the context of the Construction Documents indicate.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
  2. Abbreviations: Materials and products are identified by abbreviations.
  3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

### 1.8 MISCELLANEOUS PROVISIONS

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.2 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time as authorized by General Conditions.

1.3 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: **Architect** will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
  - 1. Work Change Proposal Requests issued by **Architect** are not instructions either to stop work in progress or to execute the proposed change.
  - 2. Within **10 days** after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
    - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    - c. Include costs of labor and supervision directly attributable to the change.
    - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
    - e. Limit mark-ups as stipulated in the general conditions
- B. Contractor-Initiated Work Change Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to **Architect**.
  - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

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2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.
7. Limit mark-ups as stipulated in the general conditions

### 1.4 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Changes Proposal Request, **Architect** will issue a Change Order for signatures of Owner and Contractor on **AIA Document G701**.

### 1.5 CONSTRUCTION CHANGE DIRECTIVE

- A. **Construction** Change Directive: **Architect** may issue a **Construction** Change Directive on **AIA Document G714** Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
  1. **Construction** Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the **Construction** Change Directive.
  1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.2 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
  - 1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
    - a. Application for Payment forms with continuation sheets.
    - b. Submittal schedule.
    - c. Items required to be indicated as separate activities in Contractor's construction schedule.
  - 2. Submit the schedule of values to Architect at earliest possible date but no later than **seven** days before the date scheduled for submittal of initial Applications for Payment.
  - 3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
  - 1. Identification: Include the following Project identification on the schedule of values:
    - a. Project name and location.
    - b. Name of Architect.
    - c. Architect's project number.
    - d. Contractor's name and address.
    - e. Date of submittal.
  - 2. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts where appropriate. Include separate line items under required principal subcontracts for operation and maintenance manuals, punch list activities/ close-out items, Project Record Documents in the amount of 2 percent of the Contract Sum.
  - 3. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

## LOVINGTON FIRE STATION # 2

4. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
5. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
6. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
7. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
  - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
8. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

### 1.3 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
  1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
- C. Application for Payment Forms: Use **AIA Document G702 and AIA Document G703** as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. **Architect** will return incomplete applications without action.
  1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
  2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- E. Transmittal: Submit **five** signed and notarized original copies of each Application for Payment to **Architect** by a method ensuring receipt. One copy shall include waivers of lien and similar attachments if required.
  1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

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- F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
  2. When an application shows completion of an item, submit conditional final or full waivers.
  3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
  4. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.
- G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
  2. Schedule of values.
  3. Sustainable design submittal for project materials cost data.
  4. Contractor's construction schedule (preliminary if not final).
  5. Sustainable design action plans.
  6. Schedule of unit prices.
  7. Submittal schedule (preliminary if not final).
  8. List of Contractor's staff assignments.
  9. List of Contractor's principal consultants.
  10. Copies of building permits.
  11. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
  12. Initial progress report.
  13. Report of preconstruction conference.
  14. Certificates of insurance and insurance policies.
- H. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
  2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- I. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
  2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
  3. Updated final statement, accounting for final changes to the Contract Sum.
  4. AIA Document G706-1994, "Contractor's Affidavit of Payment of Debts and Claims."
  5. AIA Document G706A-1994, "Contractor's Affidavit of Release of Liens."
  6. AIA Document G707-1994, "Consent of Surety to Final Payment."



LOVINGTON FIRE STATION # 2

7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

## LOVINGTON FIRE STATION # 2

### SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
  - 1. Requests for Information (RFIs).
  - 2. Project meetings.
- B. Related Requirements:
  - 1. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

##### 1.2 DEFINITIONS

- A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

##### 1.3 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. [ Use **CSI Form 1.5A.** ] Include the following information in tabular form:
  - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
  - 2. Number and title of related Specification Section(s) covered by subcontract.
  - 3. Drawing number and detail references, as appropriate, covered by subcontract.

##### 1.4 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
  - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.

## LOVINGTON FIRE STATION # 2

2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
  3. Make adequate provisions to accommodate items scheduled for later installation.
  4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service and repair of all components, including mechanical and electrical.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's construction schedule.
  2. Preparation of the schedule of values.
  3. Installation and removal of temporary facilities and controls.
  4. Delivery and processing of submittals.
  5. Progress meetings.
  6. Preinstallation conferences.
  7. Project closeout activities.
  8. Startup and adjustment of systems.

### 1.5 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
  2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
1. Project name.
  2. Project number.
  3. Date.
  4. Name of Contractor.
  5. Name of Architect.
  6. RFI number, numbered sequentially.
  7. RFI subject.
  8. Specification Section number and title and related paragraphs, as appropriate.
  9. Drawing number and detail references, as appropriate.
  10. Field dimensions and conditions, as appropriate.

## LOVINGTON FIRE STATION # 2

11. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
  12. Contractor's signature.
  13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
- C. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow **seven** working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
1. The following RFIs will be returned without action:
    - a. Requests for approval of submittals.
    - b. Requests for approval of substitutions.
    - c. Requests for coordination information already indicated in the Contract Documents.
    - d. Requests for adjustments in the Contract Time or the Contract Sum.
    - e. Requests for interpretation of Architect's actions on submittals.
    - f. Incomplete RFIs or inaccurately prepared RFIs.
  2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
  3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
- D. RFI Log: Prepare, maintain, and a tabular log of RFIs organized by the RFI number.:]
1. Project name.
  2. Name and address of Contractor.
  3. Name and address of Architect.
  4. RFI number including RFIs that were dropped and not submitted.
  5. RFI description.
  6. Date the RFI was submitted.
  7. Date Architect's response was received.
- E. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within **seven** days if Contractor disagrees with response.
1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
  2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.
- 1.6 PROJECT MEETINGS
- A. General: **Architect will coordinate** meetings and conferences at Project site unless otherwise indicated.

## LOVINGTON FIRE STATION # 2

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
  2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
  3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, and Architect, within **three** days of the meeting.
- B. Preconstruction Conference: **Architect will schedule and conduct** a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than **15** days after execution of the Agreement.
1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  2. Agenda: Discuss items of significance that could affect progress, including the following:
    - a. Tentative construction schedule.
    - b. Phasing.
    - c. Critical work sequencing and long-lead items.
    - d. Designation of key personnel and their duties.
    - e. Procedures for processing field decisions and Change Orders.
    - f. Procedures for RFIs.
    - g. Procedures for testing and inspecting.
    - h. Procedures for processing Applications for Payment.
    - i. Distribution of the Contract Documents.
    - j. Submittal procedures.
    - k. Sustainable design requirements.
    - l. Preparation of record documents.
    - m. Use of the premises.
    - n. Work restrictions.
    - o. Working hours.
    - p. Owner's occupancy requirements.
    - q. Responsibility for temporary facilities and controls.
    - r. Procedures for moisture and mold control.
    - s. Procedures for disruptions and shutdowns.
    - t. Construction waste management and recycling.
    - u. Parking availability.
    - v. Office, work, and storage areas.
    - w. Equipment deliveries and priorities.
    - x. First aid.
    - y. Security.
    - z. Progress cleaning.
  3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

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1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect, of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
  - a. Contract Documents.
  - b. Options.
  - c. Related RFIs.
  - d. Related Change Orders.
  - e. Purchases.
  - f. Deliveries.
  - g. Submittals.
  - h. Sustainable design requirements.
  - i. Review of mockups.
  - j. Possible conflicts.
  - k. Compatibility problems.
  - l. Time schedules.
  - m. Weather limitations.
  - n. Manufacturer's written instructions.
  - o. Warranty requirements.
  - p. Compatibility of materials.
  - q. Acceptability of substrates.
  - r. Temporary facilities and controls.
  - s. Space and access limitations.
  - t. Regulations of authorities having jurisdiction.
  - u. Testing and inspecting requirements.
  - v. Installation procedures.
  - w. Coordination with other work.
  - x. Required performance results.
  - y. Protection of adjacent work.
  - z. Protection of construction and personnel.
3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: **The Contractor will conduct** progress meetings at **regular** intervals.

1. Attendees: In addition to representatives of Owner, and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

## LOVINGTON FIRE STATION # 2

2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
  - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
    - 1) Review schedule for next period.
  - b. Review present and future needs of each entity present, including the following:
    - 1) Interface requirements.
    - 2) Sequence of operations.
    - 3) Status of submittals.
    - 4) Status of sustainable design documentation.
    - 5) Deliveries.
    - 6) Off-site fabrication.
    - 7) Access.
    - 8) Site utilization.
    - 9) Temporary facilities and controls.
    - 10) Progress cleaning.
    - 11) Quality and work standards.
    - 12) Status of correction of deficient items.
    - 13) Field observations.
    - 14) Status of RFIs.
    - 15) Status of proposal requests.
    - 16) Pending changes.
    - 17) Status of Change Orders.
    - 18) Pending claims and disputes.
    - 19) Documentation of information for payment requests.
3. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
  - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
  - 1. Contractor's construction schedule.
  - 2. Submittals Schedule
  - 3. Construction schedule updating reports.
  - 4. Daily construction reports.
  - 5. Site condition reports.
  - 6. As-builts
- B. Related Requirements:
  - 1. Section 012900 "Payment Procedures."

1.2 DEFINITIONS

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

1.3 SUBMITTALS SCHEDULE

- A. Preparation; Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, re-



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submittal, ordering manufacturing, fabrication, and delivery when establishing dates

- a) Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
- b) Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

### 1.4 COORDINATION

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

## PART 2 - PRODUCTS

### 2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for **the Notice to Proceed** to date of **Substantial Completion**.
  1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
  1. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
  2. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
  3. Startup and Testing Time: Include no fewer than 30 days for startup and testing.
  4. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

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1. Phasing: Arrange list of activities on schedule by phase.
  2. Work under More Than One Contract: Include a separate activity for each contract.
  3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
  4. Work Restrictions: Show the effect of the following items on the schedule:
    - A. Coordination with existing construction.
    - B. Limitations of continued occupancies.
    - C. Uninterruptible services.
    - D. Partial occupancy before Substantial Completion.
    - E. Use of premises restrictions.
    - F. Provisions for future construction.
    - G. Seasonal variations.
    - H. Environmental control.
  5. Work Stages: Indicate important stages of construction for each major portion of the Work.
- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.
- E. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
1. Unresolved issues.
  2. Unanswered Requests for Information.
  3. Rejected or unreturned submittals.
  4. Notations on returned submittals.
  5. Pending modifications affecting the Work and Contract Time.
- F. Recovery Schedule: When periodic update indicates, the Work is **15** or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule.
- ### 2.2 REPORTS
- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
1. List of subcontractors at Project site.
  2. Equipment at Project site.
  3. Material deliveries.
  4. High and low temperatures and general weather conditions, including presence of rain or snow.
  5. Accidents.
  6. Stoppages, delays, shortages, and losses.
  7. Meter readings and similar recordings.

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8. Emergency procedures.
  9. Orders and requests of authorities having jurisdiction.
  10. Services connected and disconnected.
  11. Equipment or system tests and startups.
- B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

### PART 3 - EXECUTION

#### 3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At **monthly** intervals, update schedule to reflect actual construction progress and activities. Issue schedule before each regularly scheduled progress meeting.
1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
  2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
  3. As the Work progresses, indicate final completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
  2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

#### 3.2 AS-BUILT

- A. Maintain on site a set of Drawings to document as-built conditions, and keep up-to-date with all revisions to the work and deviations from the plans. As-built documents shall be reviewed by the Architect monthly.

END OF SECTION 013200

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Requirements:
  - 1. Section 013200 "Construction Progress Documentation"
  - 2. Section 014000 "Quality Requirements"
  - 3. Section 017700 "Closeout Procedures"
  - 4. Section 017839 "Project Record Documents".
  - 5. Section 017823 "Operation and Maintenance Data"

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action.
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Architect's Digital Data Files: Electronic copies of digital data files of the Contract Drawings will **not** be provided by Architect for Contractor's use in preparing submittals.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
  - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

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2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
  - a. **Architect reserves** the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on **Architect's** receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
  1. Initial Review: Allow **15** days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. **Architect** will advise Contractor when a submittal being processed must be delayed for coordination.
  2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  3. Resubmittal Review: Allow **15** days for review of each resubmittal.
- D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
  1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
  2. Name file with submittal number or other unique identifier, including revision identifier.
    - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
  3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
  4. Transmittal Form for Electronic Submittals: Use **electronic form** acceptable to Owner, containing the following information:
    - a. Project name.
    - b. Date.
    - c. Name and address of Architect.
    - d. Name of Contractor.
    - e. Name of firm or entity that prepared submittal.
    - f. Names of subcontractor, manufacturer, and supplier.
    - g. Specification Section number and title.
    - h. Specification paragraph number or drawing designation and generic name for each of multiple items.
    - i. Drawing number and detail references, as appropriate.
    - j. Location(s) where product is to be installed, as appropriate.
    - k. Related physical samples submitted directly.
    - l. Indication of full or partial submittal.
    - m. Transmittal number, **numbered consecutively**.

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- n. Submittal and transmittal distribution record.
  - o. Other necessary identification.
  - p. Remarks.
- E. Options: Identify options requiring selection by Architect.
- F. Deviations: Identify deviations from the Contract Documents on submittals.
- G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
- 1. Note date and content of previous submittal.
  - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
  - 3. Resubmit submittals until they are marked with approval notation from Architect's action stamp. "APPROVED AS NOTED" or "APPROVED"
- H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- I. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp. "APPROVED AS NOTED" or "APPROVED"

## PART 2 - PRODUCTS

### 2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements:
- 1. Post electronic submittals as PDF electronic files directly to website specifically established for Project, if provided by Contractor
    - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
  - 2. Submit electronic submittals via email as PDF electronic files. If website is not provided
    - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
- 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
  - 2. Mark each copy of each submittal to show which products and options are applicable.
  - 3. Include the following information, as applicable:

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- a. Manufacturer's catalog cuts.
  - b. Manufacturer's product specifications.
  - c. Standard color charts.
  - d. Statement of compliance with specified referenced standards.
  - e. Testing by recognized testing agency.
  - f. Application of testing agency labels and seals.
  - g. Notation of coordination requirements.
  - h. Availability and delivery time information.
4. For equipment, include the following in addition to the above, as applicable:
- a. Wiring diagrams showing factory-installed wiring.
  - b. Printed performance curves.
  - c. Operational range diagrams.
  - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
5. Submit Product Data before or concurrent with Samples.
6. Submit Product Data in the following format:
- a. PDF electronic file.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
  2.
    - a. Identification of products.
    - b. Dimensions
    - c. Fabrication and installation drawings
    - d. Roughing -in and setting diagrams.
    - e. Shop work manufacturing instructions.
    - f. Templates and patterns
    - g. Schdeules
    - h. Compliance with specified standards.
    - i. Notation of coordination requirements.
    - j. Notation of dimensions established by field measurement.
    - k. Relationship and attachment to adjoining construction clearly indicated.
    - l. Seal and signature of professional engineer if specified.
  3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least **8-1/2 by 11 inches, but no larger than 30 by 42 inches.**
  4. Submit Shop Drawings in the following format:
    - a. PDF electronic file.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

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1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
  2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Number and title of applicable Specification Section.
  3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
  4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - a. Number of Samples: Submit **one** full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Submit product schedule in the following format:
    - a. PDF electronic file.
- F. Coordination Drawings Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."
- G. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."
- H. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures."
- I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."
- J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- K. Maintenance Data: Comply with requirements specified in Section 017823 "Operation and Maintenance Data."
- L. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- M. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure



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Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

- N. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- O. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- P. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- Q. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- R. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- S. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- T. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.
- U. Schedule of Tests and Inspections: Comply with requirements specified in Section 014000 "Quality Requirements."
- V. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- W. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- X. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- Y. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

- A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate **action, as follows:**
  - 1. Final Unrestricted Release: When submittals are marked "Approved", that part of the work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend upon that compliance.
  - 2. Final-But-Restricted Release: When submittals are marked "Approved as noted", that part of the work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
  - 3. Returned for Resubmittal: When submittals are marked "Revise and Resubmit", do not proceed with that part of the work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
    - a. Do not permit submittals marked "Revise and Resubmit" to be used at the Project Site, or elsewhere where work is in progress.
- C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

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- E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
  - 2. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, [**Commissioning Authority**], [**Construction Manager**], or authorities having jurisdiction are not limited by provisions of this Section.
  - 3. Specific test and inspection requirements are not specified in this Section.
- C. See Division 3 through 33 Sections for specific test and inspection requirements.

1.2 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
  - 1. Laboratory Mockups: Full-size physical assemblies constructed at testing facility to verify performance characteristics.
- D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

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- E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  - 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of [**five**] <Insert number> previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

### 1.3 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

### 1.4 INFORMATIONAL SUBMITTALS

- A. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:
  - 1. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Architect.

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2. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.

B. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

### 1.5 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to **ASTM E 548** and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.

2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Manufacturer's Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

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### 1.6 QUALITY CONTROL

- A. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  2. Notify testing agencies at least **24** hours in advance of time when Work that requires testing or inspecting will be performed.
  3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- B. Manufacturer's Field Services: Where indicated, engage a manufacturer's representative to observe and inspect the Work. Manufacturer's representative's services include examination of substrates and conditions, verification of materials, inspection of completed portions of the Work, and submittal of written reports.
- C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- D. Testing Agency Responsibilities: Cooperate with Architect[, **Construction Manager,**] and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect[, **Construction Manager,**] and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
  6. Do not perform any duties of Contractor.
- E. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

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1. Access to the Work.
  2. Incidental labor and facilities necessary to facilitate tests and inspections.
  3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  4. Facilities for storage and field curing of test samples.
  5. Delivery of samples to testing agencies.
  6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  7. Security and protection for samples and for testing and inspecting equipment at Project site.
- F. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

### PART 2 - PRODUCTS (Not Used)

### PART 3 - EXECUTION

#### 3.1 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000



SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
  - 1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.2 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Architect, testing agencies, and authorities having jurisdiction.
- B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- C. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.3 SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
- C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire prevention program.

1.4 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

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- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

### 1.5 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Chain-Link Fencing: Panelized 6 foot high commercial grade chain link fence. Equip with vehicular and pedestrian gates with locks.
- B. Lumber and Plywood: Comply with requirements in Division 6 Section "Miscellaneous Carpentry."
- C. Gypsum Board: Minimum 1/2 inch (12.7 mm) thick by 48 inches (1219 mm) wide by maximum available lengths; regular-type panels with tapered edges. Comply with ASTM C 36/C 36M.
- D. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

### 2.2 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly.
- C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

### 2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

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1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.
3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of **8** at each return-air grille in system and remove at end of construction.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
  1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

#### 3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
  1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
  1. Connect temporary sewers to **municipal system** as directed by authorities having jurisdiction.
- C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.
- D. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- E. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
  1. Toilets: Use of Owner's existing toilet facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

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- F. **Heating and Cooling:** Provide temporary heating **and cooling** required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
- G. **Ventilation and Humidity Control:** Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
- H. **Electric Power Service:** Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
  - 1. Install electric power service **underground** unless otherwise indicated.
  - 2. Connect temporary service to Owner's existing power source, as directed by Owner.
- I. **Lighting:** Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
  - 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
- J. **Telephone Service:** Provide temporary telephone service in common-use facilities for use by all construction personnel. Install **one** telephone line(s) for each field office.
- K. **Electronic Communication Service:** Provide a desktop computer in the primary field office adequate for use by Architect and Owner to access project electronic documents and maintain electronic communications. Equip computer with not less than the following:

### 3.3 SUPPORT FACILITIES INSTALLATION

- A. **General:** Comply with the following:
  - 1. Provide construction for temporary offices, shops, and sheds located within construction area or within **30 feet** of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
  - 2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. **Temporary Roads and Paved Areas:** Construct and maintain temporary roads and paved areas adequate for construction operations.
  - 1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.
- C. **Traffic Controls:** Comply with requirements of authorities having jurisdiction.

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1. Protect existing site improvements to remain including curbs, pavement, and utilities.
  2. Maintain access for fire-fighting equipment and access to fire hydrants.
- D. Parking: **Provide temporary** parking areas for construction personnel.
- E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
  2. Remove snow and ice as required to minimize accumulations.
- F. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
1. Identification Signs: Provide Project identification signs as indicated on Drawings.
  2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
    - a. Provide temporary, directional signs for construction personnel and visitors.
  3. Maintain and touchup signs so they are legible at all times.
- G. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- H. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."
- I. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- J. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.
- 3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION
- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to **authorities having jurisdiction.**

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- D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- E. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.
- G. Site Enclosure Fence: **Prior to commencing earthwork**, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
  - 1. Extent of Fence: **As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.**
  - 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. **Furnish one set of keys to Owner.**
- H. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.
- I. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- J. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- K. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
  - 1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.
- L. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by **Owner** from fumes and noise.
  - 1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
  - 2. Construct dustproof partitions with two layers of **6-mil** polyethylene sheet on each side. Cover floor with two layers of **6-mil** polyethylene sheet, extending sheets **18 inches** up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant-treated plywood.

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- a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches between doors. Maintain water-dampened foot mats in vestibule.
  3. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
  4. Insulate partitions to control noise transmission to occupied areas.
  5. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
  6. Protect air-handling equipment.
  7. Provide walk-off mats at each entrance through temporary partition.
- M. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire prevention program.
1. Prohibit smoking in construction areas.
  2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
  3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
  4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

### 3.5 MOISTURE AND MOLD CONTROL

- A. Contractor's Moisture Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.
- B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect materials from water damage and keep porous and organic materials from coming into prolonged contact with concrete.
- C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
  1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
  2. Keep interior spaces reasonably clean and protected from water damage.
  3. Discard or replace water-damaged and wet material.
  4. Discard, replace, or clean stored or installed material that begins to grow mold.
  5. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.
- D. Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:

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1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
2. Remove materials that cannot be completely restored to their manufactured moisture level within **48** hours.

### 3.6 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
  1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
  1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
  2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000



SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
  - 1. See Division 1 Section "Closeout Procedures" for submitting warranties for Contract closeout.
  - 2. See Divisions 2 through 16 Sections for specific requirements for warranties on products and installations specified to be warranted

1.2 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
  - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
  - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
  - 3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
- C. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.3 SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

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1. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    - a. Statement indicating why specified material or product cannot be provided.
    - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction that will be necessary to accommodate proposed substitution.
    - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
    - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
    - e. Samples, where applicable or requested.
    - f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
    - g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
    - h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
    - i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
    - j. Cost information, including a proposal of change, if any, in the Contract Sum.
    - k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
    - l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results
  2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within **15** days of receipt of request, or **seven** days of receipt of additional information or documentation, whichever is later.
    - a. Form of Approval: As specified in Section 013300 "Submittal Procedures."
    - b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.
- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Submittal Procedures." Show compliance with requirements.

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### 1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

### 1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
  - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
  - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
  - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  - 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
- C. Storage:
  - 1. Store products to allow for inspection and measurement of quantity or counting of units.
  - 2. Store materials in a manner that will not endanger Project structure.
  - 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
  - 4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
  - 5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
  - 6. Protect stored products from damage and liquids from freezing.

### 1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
  - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
  - 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

## LOVINGTON FIRE STATION # 2

- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
  - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
  - 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
  - 3. Refer to other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

### PART 2 - PRODUCTS

#### 2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
  - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
  - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
  - 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
  - 4. Where products are accompanied by the term "as selected," Architect will make selection.
  - 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
- B. Product Selection Procedures:
  - 1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
  - 2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
  - 3. Products:
    - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements.
  - 4. Manufacturers:

## LOVINGTON FIRE STATION # 2

- a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
  - b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
- C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

### 2.2 PRODUCT SUBSTITUTIONS

- A. Timing: Architect will consider requests for substitution if received within 60 days after commencement of the Work. Requests received after that time may be considered or rejected at discretion of Architect.
- B. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
  2. Requested substitution does not require extensive revisions to the Contract Documents.
  3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
  4. Substitution request is fully documented and properly submitted.
  5. Requested substitution will not adversely affect Contractor's Construction Schedule.

## LOVINGTON FIRE STATION # 2

6. Requested substitution has received necessary approvals of authorities having jurisdiction.
7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated with other portions of the Work.
9. Requested substitution provides specified warranty.

### 2.3 COMPARABLE PRODUCTS

- A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:
1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
  2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
  3. Evidence that proposed product provides specified warranty.
  4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
  5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

## LOVINGTON FIRE STATION # 2

### SECTION 017300 - EXECUTION

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
  - 1. Construction layout.
  - 2. Field engineering and surveying.
  - 3. Progress cleaning.
  - 4. Starting and adjusting.
  - 5. Protection of installed construction.
  - 6. Correction of the Work
- B. Related Requirements:
  - 1. Section 011000 "Summary"
  - 2. Section 017700 "Closeout Procedures"

#### PART 2 - PRODUCTS (Not Used)

#### PART 3 - EXECUTION

##### 3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, **mechanical and electrical systems**, and other construction affecting the Work.
  - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
  - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
  - 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.

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2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
  3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

### 3.2 PREPARATION

- A. Existing Utility Information: Furnish information to **[local utility]** **[Owner]** that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 013100 "Project Management and Coordination."

### 3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. General: Engage a **professional** to lay out the Work using accepted surveying practices.
1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
  2. Establish limits on use of Project site.
  3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
  4. Inform installers of lines and levels to which they must comply.
  5. Check the location, level and plumb, of every major element as the Work progresses.
  6. Notify Architect **[ and Construction Manager ]** when deviations from required lines and levels exceed allowable tolerances.
  7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.



## LOVINGTON FIRE STATION # 2

- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect[ **and Construction Manager**].

### 3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
- B. Benchmarks: Establish and maintain a minimum of [**two**] <**Insert number**> permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
  - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

### 3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  - 1. Make vertical work plumb and make horizontal work level.
  - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

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- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
  - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
  - 2. Allow for building movement, including thermal expansion and contraction.
  - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

### 3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
  - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
  - 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
  - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
  - 1. Remove liquid spills promptly.
  - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

## LOVINGTON FIRE STATION # 2

- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

### 3.7 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements"

### 3.8 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

### 3.9 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 1 Section "Selective Demolition."
  - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

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- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces

END OF SECTION 017300

## LOVINGTON FIRE STATION # 2

### SECTION 017700 - CLOSEOUT PROCEDURES

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Substantial Completion procedures.
  - 2. Final completion procedures.
  - 3. Warranties.
  - 4. Final cleaning.
- B. Related Requirements:
  - 1. Section 02900 "Payment Procedures"
  - 2. Section 017839 "Project Record Documents"
  - 3. Section 017823 "Operation and Maintenance Data"
  - 4. See Divisions 2 through 16 Sections for specific closeout and special cleaning requirements for the Work in those Sections.
  - 5. See Divisions 2 through 16 Sections for systems specific training requirements for the Work in those Sections

##### 1.2 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Procedures Prior to Substantial Completion: Complete the following a minimum of **10** days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
  - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
  - 2. Advise Owner of pending insurance changeover requirements.
  - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications and similar documents.
  - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
  - 6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.

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7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
8. Complete startup testing of systems.
9. Submit test/adjust/balance records.
10. Terminate and remove temporary facilities from Project site, construction tools, and similar elements.
11. Advise Owner of changeover in heat and other utilities.
12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance. Provide videotaped training sessions for NMSU employee use for systems specific training.
13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

C. Inspection: Submit a written request for inspection to determine Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

### 1.3 FINAL COMPLETION PROCEDURES

A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection to determine acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

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### 1.4 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
  - 1. Organize list of spaces in sequential order, **starting with exterior areas first and proceeding from lowest floor to highest floor**.
  - 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

### 1.5 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
  - 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive **8-1/2-by-11-inch** paper.
  - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
  - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
  - 4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
  - 1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
  - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
    - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    - e. Remove snow and ice to provide safe access to building.
    - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    - h. Sweep concrete floors broom clean in unoccupied spaces.
    - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
    - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
    - k. Remove labels that are not permanent.
    - l. Wipe surfaces of mechanical and electrical equipment[, **elevator equipment,**] and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
    - m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
    - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
    - o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
    - p. Leave Project clean and ready for occupancy.



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- C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

END OF SECTION 017700

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

- ~~1. Operation and maintenance documentation directory.~~
2. Emergency manuals.
3. Operation manuals for systems, subsystems, and equipment.
4. Product maintenance manuals.
5. Systems and equipment maintenance manuals.

1.2 CLOSEOUT SUBMITTALS

- A. Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least **15** days before commencing demonstration and training. Architect will return copy with comments.
1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within **15** days of receipt of Architect's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information.
- B. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
1. Title page.
  2. Table of contents.
  3. Manual contents.
- C. Title Page: Include the following information:
1. Subject matter included in manual.
  2. Name and address of Project.
  3. Name and address of Owner.

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4. Date of submittal.
  5. Name and contact information for Contractor.
  6. Name and contact information for Construction Manager.
  7. Name and contact information for Architect.
  8. Name and contact information for Commissioning Authority.
  9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
  10. Cross-reference to related systems in other operation and maintenance manuals.
- D. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
- E. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- F. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.
1. Binders: Heavy-duty, three-ring, vinyl-covered, **loose-leaf** binders, in thickness necessary to accommodate contents, sized to hold **8-1/2-by-11-inch** paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
    - a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, **and** subject matter of contents, **and indicate Specification Section number on bottom of spine.** Indicate volume number for multiple-volume sets.
  2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
  3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
  4. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
    - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

### 2.2 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for each of the following:
1. Type of emergency.
  2. Emergency instructions.

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

### 2.3 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
  2. Performance and design criteria if Contractor is delegated design responsibility.
  3. Operating standards.
  4. Operating procedures.
  5. Operating logs.
  6. Wiring diagrams.
  7. Control diagrams.
  8. Piped system diagrams.
  9. Precautions against improper use.
  10. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
1. Product name and model number. Use designations for products indicated on Contract Documents.
  2. Manufacturer's name.
  3. Equipment identification with serial number of each component.
  4. Equipment function.

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5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

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

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

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

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

### 2.4 PRODUCT MAINTENANCE MANUALS

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

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- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

### 2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
  - 1. Standard maintenance instructions and bulletins.
  - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
  - 3. Identification and nomenclature of parts and components.
  - 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
  - 1. Test and inspection instructions.
  - 2. Troubleshooting guide.
  - 3. Precautions against improper maintenance.
  - 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
  - 5. Aligning, adjusting, and checking instructions.
  - 6. Demonstration and training video recording, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
- D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
- E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
  - 1. Do not use original project record documents as part of operation and maintenance manuals.
- F. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

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### SECTION 017839 - PROJECT RECORD DOCUMENTS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
  - 1. Record Drawings. (As-Built)
  - 2. Record Specifications.
  - 3. Record Product Data.
- B. Related Requirements:
  - 1. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

##### 1.2 SUBMITTALS

- A. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit copies of record Drawings as follows:
    - a. Initial Submittal:
      - 1) Submit **one** paper-copy set(s) of marked-up record prints completed from original Contract Documents that are acceptable to the Architect.
    - b. Final Submittal:
      - 1) Architect will prepare the final Record Drawings submittal to the Owner
- B. Record Specifications: Submit **one paper copy** of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit **one paper copy** of each submittal.

#### PART 2 - PRODUCTS

##### 2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised Drawings as modifications are issued. Mark prominently as "PROJECT RECORD DRAWINGS"



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1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
    - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    - b. Record data as soon as possible after obtaining it.
    - c. Record and check the markup before enclosing concealed installations.
  2. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
  3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
- B. Record Drawings: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. All final and revised as-built drawings and close-out documents are to be delivered to the Architect with delivery of the Substantial Completion document. The Architect will prepare a full set of corrected digital data files of the Contract Drawings.

### 2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
  3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
  4. Note related Change Orders, and record Drawings where applicable.

### 2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
  3. Note related Change Orders, **Record Specifications**, and record Drawings where applicable.

## LOVINGTON FIRE STATION # 2

### 2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

## PART 3 - EXECUTION

### 3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

END OF SECTION 017839

## LOVINGTON FIRE STATION # 2

### SECTION 024116 - STRUCTURE DEMOLITION

#### PART 1 GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.2 SUMMARY

- A. Section Includes:
  - 1. Demolition and removal of building foundations and site improvements.
  - 2. Removing below-grade construction.
  - 3. Disconnecting, capping or sealing, and removing site utilities.
- B. Related Sections:
  - 1. Section 01 1000 "Summary" for use of the premises and phasing requirements.
  - 2. Section 01 3200 "Construction Progress Documentation" for preconstruction photographs taken before building demolition.
  - 3. Section 02 4119 "Selective Demolition" for partial demolition of buildings, structures, and site improvements.
  - 4. Section 31 1000 "Site Clearing" for site clearing and removal of above- and below-grade site improvements not part of building demolition.
  - 5. Section 33 0500 "Common Work Results for Utilities" for shutting off, disconnecting, removing, and sealing or capping utilities.

##### 1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner. Include fasteners or brackets needed for reattachment elsewhere.

##### 1.4 MATERIALS OWNERSHIP

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

##### 1.5 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Submit informational report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and, for noise control. Indicate proposed locations and construction of barriers.
- B. Schedule of Building Demolition Activities: Indicate the following:
  - 1. Detailed sequence of demolition work, with starting and ending dates for each activity.
  - 2. Temporary interruption of utility services.
  - 3. Shutoff and capping or re-routing of utility services.

## LOVINGTON FIRE STATION # 2

- C. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.

### 1.6 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

### 1.7 PROJECT CONDITIONS

- A. Buildings to be demolished will be vacated and their use discontinued before start of the Work.
- B. Owner assumes no responsibility for buildings and structures to be demolished.
  - 1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1. Hazardous materials will be removed by Owner before start of the Work.
  - 2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- D. On-site storage or sale of removed items or materials is not permitted.

## PART 2 PRODUCTS (Not Used)

### 2.1 SOIL MATERIALS

- A. Satisfactory Soils: Comply with requirements in Section 31 2300 "Earthwork."

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting demolition operations.
- B. Review Project Record Documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

### 3.2 PREPARATION

- A. Existing Utilities: Locate, identify, disconnect, and seal or cap off indicated utilities serving buildings and structures to be demolished.
  - 1. Arrange to shut off indicated utilities with utility companies.
  - 2. If removal, relocation, or abandonment of utility services will affect adjacent occupied buildings, then provide temporary utilities that bypass buildings and structures to be demolished and that maintain continuity of service to other buildings and structures.

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3. Cut off pipe or conduit a minimum of 24 inches (610 mm) below grade. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing according to requirements of authorities having jurisdiction.
- B. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.
1. Strengthen or add new supports when required during progress of demolition.
- C. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from existing buildings.
- D. Existing Utilities: Maintain utility services to remain and protect from damage during demolition operations.
1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.
  2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and authorities having jurisdiction.
- E. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated. Comply with requirements in Section 01 5000 "Temporary Facilities and Controls."
- F. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

### 3.3 DEMOLITION, GENERAL

- A. General: Demolish indicated building foundations and site improvements completely. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations.
  2. Maintain fire watch during and after flame cutting operations.
  3. Maintain adequate ventilation when using cutting torches.
  4. Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
- B. Engineering Surveys: During demolition, perform surveys to detect hazards that may result from building demolition activities.
- C. Site Access and Temporary Controls: Conduct building demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

## LOVINGTON FIRE STATION # 2

2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

D. Explosives: Use of explosives is not permitted.

### 3.4 DEMOLITION BY MECHANICAL MEANS

A. Below-Grade Construction: Demolish foundation walls and other below-grade construction.

1. Remove below-grade construction, including basements, foundation walls, and footings, completely.

B. Existing Utilities: Demolish and remove existing utilities and below-grade utility structures.

1. Piping: Disconnect piping at unions, flanges, valves, or fittings.
2. Wiring Ducts: Disassemble into unit lengths and remove plug-in and disconnecting devices.

### 3.5 SITE RESTORATION

A. Below-Grade Areas: Completely fill below-grade areas and voids resulting from building demolition operations with satisfactory soil materials according to backfill requirements in Section 31 2300 "Earthwork."

B. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

### 3.6 REPAIRS

A. Promptly repair damage to adjacent buildings caused by demolition operations.

### 3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site and legally dispose of them in an EPA-approved landfill acceptable to authorities having jurisdiction. See Section 01 7419 "Construction Waste Management and Disposal" for recycling and disposal of demolition waste.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Do not burn demolished materials.

### 3.8 CLEANING

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

1. Clean roadways of debris caused by debris transport.

END OF SECTION 024116

SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Formwork.
  - 2. Reinforcement.
  - 3. Accessories.
  - 4. Cast-in place concrete.
  - 5. Finishing and curing.

1.2 SYSTEM DESCRIPTION

- A. Design, engineer and construct formwork, shoring and bracing in accordance with ACI 301 to conform to applicable code requirements to achieve concrete shape, line and dimension as indicated on Drawings.
- B. Vapor Retarder Permeance: Maximum 1 perm when tested in accordance with ASTM E96/E96M.

1.3 SUBMITTALS

- A. Shop Drawings:
  - 1. Indicate pertinent dimensioning, form materials, arrangement of joints and ties,
  - 2. Indicate reinforcement sizes, spacings, locations, and quantities, bending and cutting schedules, supporting and spacing devices.
  - 3. Indicate sidewalks, and slabs-on-grade.
- B. Product Data: Indicate admixtures, curing compounds and vapor barriers
- C. Design Data: Submit mix designs.

1.4 QUALITY ASSURANCE

- A. Construct and erect concrete formwork in accordance with ACI 301, ACI 318, and ACI 347.
- B. Perform concrete reinforcing work in accordance with ACI 301, ACI 318 and the CRSI Manual of Practice.
- C. Perform cast-in-place concrete work in accordance with ACI 301 and ACI 318.
- D. Maintain one copy of each document on site.

## PART 2 PRODUCTS

### 2.1 FORM MATERIALS AND ACCESSORIES

- A. Form Materials: At discretion of Contractor.
- B. Form Ties: Snap-off, metal cone type. Form ties shall provide a finished recess that can be grouted.
- C. Form Release Agent: Colorless mineral oil not capable of staining concrete or impairing natural bonding characteristics of coating intended for use on concrete.
- D. Vapor Retarder: ASTM E1745 Class A; 10 mil thick fabric reinforced plastic film; type recommended for below grade application. Furnish joint tape recommended by manufacturer.

### 2.2 REINFORCEMENT MATERIALS

- A. Reinforcing Steel: ASTM A615/A615M, 60 yield grade, deformed billet bars,.
- B. Welded Plain Wire Fabric: ASTM A185/A185M; in flat sheets.
- C. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for support of reinforcing; plastic tipped or non-corroding for supports in slabs forming finished ceilings or where supports are exposed to weather.
- D. Fabricate concrete reinforcement in accordance with CRSI Manual of Practice, and ACI 301.

### 2.3 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type I or Type II Portland type.
- B. Fine and Coarse Aggregates: ASTM C33.
- C. Water: Clean and not detrimental to concrete.
- D. Air Entrainment Admixture: ASTM C260.
- E. Bonding Agent: Polymer resin emulsion or Latex emulsion.
- F. Non-shrink Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.

### 2.4 CONCRETE MIX

- A. Mix and deliver concrete in accordance with ASTM C94/C94M.
- B. Furnish concrete in accordance with the general structural notes.



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- C. Select admixture proportions for normal weight concrete in accordance with ACI 318.
- D. Add air entraining agent to concrete mix per the general structural notes.

### PART 3 EXECUTION

#### 3.1 FORMWORK ERECTION

- A. Erect formwork, shoring and bracing to achieve design requirements.
- B. Camber slabs and framing to achieve ACI 301 tolerances.
- C. Provide bracing to ensure stability of formwork.
- D. Form external corners with  $\frac{3}{4}$ " chamfer.
- E. Apply form release agent to formwork prior to placing form accessories and reinforcement.
- F. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings affected by agent.
- G. Clean forms as erection proceeds, to remove foreign matter.

#### 3.2 INSERTS, EMBEDDED COMPONENTS, AND OPENINGS

- A. Provide formed openings where required for work to be embedded in and passing through concrete members.
- B. Coordinate work of other sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts.
- C. Install concrete accessories straight, level, and plumb.
- D. Install water stops continuous without displacing reinforcement.

#### 3.3 REINFORCEMENT PLACEMENT

- A. Place reinforcement, supported and secured against displacement.
- B. Ensure reinforcing is clean, free of loose scale, dirt, or other foreign coatings.
- C. Space reinforcement bars with minimum clear spacing in accordance with ACI 301.
- D. Maintain concrete cover around reinforcement in accordance with the structural general notes.

#### 3.4 PLACING CONCRETE

- A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent.

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- B. Install vapor retarder under interior slabs on grade in accordance with ASTM E1643. Lap joints minimum 6 inches and seal watertight.
- C. Repair damaged vapor retarder with vapor retarder material, lap over damaged areas minimum 6 inches and seal watertight.

### 3.5 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
- B. Remove formwork progressively and in accordance with code requirements.

### 3.6 FLOOR FINISHING

- A. Finish concrete floor surfaces in accordance with ACI 301 and ACI 302.1.
- B. Uniformly spread, screed, and float concrete.
- C. Wood float surfaces receiving quarry tile or ceramic tile with full bed setting system.
- D. Steel trowel surfaces receiving carpeting, resilient flooring, seamless flooring, thin set quarry tile, thin set ceramic tile or remaining exposed to view in finished construction.
- E. Maintain surface flatness, with maximum variation of 1/8 inch in 10 ft.
- F. In areas with floor drains, maintain floor level at walls and slope surfaces uniformly to drains.

### 3.7 CURING AND PROTECTION

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

### 3.8 FORMED SURFACES

- A. Provide concrete surfaces to be left exposed with smooth rubbed finish.

### 3.9 ERECTION TOLERANCES

- A. Install reinforcement within tolerances required by ACI 301.

### 3.10 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with ACI 301.
- B. Reinforcement Inspection:
  - 1. Inspect for correct materials, fabrication, sizes, locations, spacing, concrete cover, and splicing.
- C. Strength Test Samples:

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1. Sample concrete and make one set of four cylinders for every 75 cu yds or less of each class of concrete placed each day and for every 5,000 sf of surface area for slabs and walls. Make a minimum of two sets of cylinders each day concrete is placed for each class of concreted placed.

### D. Field Testing:

1. Measure slump and temperature for each compressive strength concrete sample.
2. Measure air content in air entrained concrete for each compressive strength concrete sample.

### E. Cylinder Compressive Strength Testing:

1. Test Method: ASTM C39/C39M.
2. Test Acceptance: In accordance with ACI 301.
3. Test one cylinder at 7 days.
4. Test two cylinders at 28 days.
5. Retain one cylinder for testing when requested by Architect/Engineer.
6. Dispose remaining cylinders when testing is not required.

## 3.11 DEFECTIVE CONCRETE

- A. Modify or replace concrete not conforming to required lines, details and elevations, as directed by Architect/Engineer.

END OF SECTION

## LOVINGTON FIRE STATION # 2

### SECTION 033543 - POLISHED CONCRETE FINISHING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes polished concrete finishing, including staining and scoring.

##### 1.2 QUALITY ASSURANCE

- A. Field Sample Panels: After approval of samples, produce field sample panels to demonstrate the approved range of selections made under Sample submittals. Produce a minimum of three sets of full-scale panels, approximately **48 by 48 inches** minimum, to demonstrate the expected range of finish, color, and appearance variations.

#### PART 2 - PRODUCTS

##### 2.1 Manufactures

- A. Basis for Design: Subject to compliance with requirements, provided LUXVRERE Concrete Floor Finish, Dimond Polishing Systems, by American Concrete Technologies, Inc. 2242 Forest park Blvd., Fort Worth, Texas 76110, 817-927-1980, [www.diamondpolish.com](http://www.diamondpolish.com), and following materials and application equipment or a comparable product:
  1. Densifier Material: Everhard Densigier: by American Concrete Technologies, Inc., [www.diamondpolish.com](http://www.diamondpolish.com)
  2. Stain guard Material: Resist all: by American Concrete Technologies [www.diamondpolish.com](http://www.diamondpolish.com)
  3. Equipment: HTC-American, PO Box 5077, Knoxville, TN 37928, 1-877-482-8700 [www.htc-american.com](http://www.htc-american.com)

##### 2.2 MATERIALS

- A. Densifier: Everguard Densifier by American Concrete Technologies
- B. Joint filler: L&M Join Tite 450 and 750 by L&M Construction Chemicals, Inc.

#### PART 3 - EXECUTION

##### 3.1 POLISHING

- A. Polish: **Level 4: Gloss shine, 3000 grit.**
- B. Apply polished concrete finish system to cured and prepared slabs.

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1. Machine grind floor surfaces to receive polished finishes level and smooth.
2. Apply reactive stain for polished concrete in polishing sequence and according to manufacturer's written instructions.
3. Apply penetrating liquid floor treatment for polished concrete in polishing sequence and according to manufacturer's written instructions, allowing recommended drying time between successive coats.
4. Apply penetrating stain for polished concrete in polishing sequence and according to manufacturer's written instructions.
5. Continue polishing with progressively finer-grit diamond polishing pads to gloss level, to match approved mockup.
6. Control and dispose of waste products produced by grinding and polishing operations.
7. Neutralize and clean polished floor surfaces.

### 3.2 STAINING

- A. Newly placed concrete shall be at least **14** days old before staining.
- B. Prepare surfaces according to manufacturer's written instructions and as follows:
  1. Clean concrete thoroughly by scraping, applying solvents or stripping agents, sweeping and pressure washing, or scrubbing with a rotary floor machine and detergents recommended by stain manufacturer. Rinse until water is clear and allow surface to dry.
    - a. Do not use acidic solutions to clean surfaces.
  2. Test surfaces with droplets of water. If water beads and does not penetrate surface, or penetrates only in some areas, profile surfaces by **acid etching, grinding, sanding, or abrasive blasting**. Retest and continue profiling surface until water droplets immediately darken and uniformly penetrate concrete surfaces.
  3. Apply acidic solution to dampened concrete surfaces, scrubbing with uncolored, acid-resistant nylon-bristle brushes until bubbling stops and concrete surface has texture of 120-grit sandpaper. Do not allow solution to dry on concrete surfaces. Rinse until water is clear. Control, collect, and legally dispose of runoff.
  4. Neutralize concrete surfaces and rinse until water is clear. Test surface for residue with clean white cloth. Test surface according to ASTM F 710 to ensure pH is between **7 and 8**.
- C. Scoring: Score decorative jointing in concrete surfaces **1/16 inch** deep with diamond blades to match pattern indicated. Rinse until water is clear. Score **before** staining.
  1. Joint Width: **3/8 inch**.
- D. Allow concrete surface to dry before applying stain. Verify readiness of concrete to receive stain according to ASTM D 4263 by tightly taping **18-by-18-inch, 4-mil** thick polyethylene sheet to a representative area of concrete surface. Apply stain only if no evidence of moisture has accumulated under sheet after 16 hours.
- E. Reactive Stain: Apply reactive stain to concrete surfaces according to manufacturer's written instructions and as follows:

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1. Apply stain by uncolored bristle brush, roller, or high-volume, low-pressure sprayer and immediately scrub into concrete surface with uncolored, acid-resistant nylon-bristle brushes in continuous, circular motion. Do not spread stain after fizzing stops. Allow to dry four hours and repeat application of stain in sufficient quantity to obtain color consistent with approved mockup.
  2. Remove stain residue after four hours by wet scrubbing with commercial-grade detergent recommended by stain manufacturer. Rinse until water is clear. Control, collect, and legally dispose of runoff.
- F. Penetrating Stain: Apply penetrating stain to concrete surfaces according to manufacturer's written instructions and as follows:
1. Apply first coat of stain to dry, clean surfaces by airless sprayer or by high-volume, low-pressure sprayer.
  2. Allow to dry four hours and repeat application of stain in sufficient quantity to obtain color consistent with approved mockup.
  3. Rinse until water is clear. Control, collect, and legally dispose of runoff.

END OF SECTION 033543

## LOVINGTON FIRE STATION # 2

### SECTION 042000 - REINFORCED UNIT MASONRY

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes concrete masonry units, reinforcement, anchorage, and accessories.
- B. Related Sections:
  - 1. Section 05120 - Structural Steel: Product requirements for steel anchors for Section 05210 - Steel Joists: Product requirements for steel bearing pads for joists for placement by this section.
  - 2. Section 07110 - Dampproofing: Dampproofing masonry surfaces.
  - 3. Section 07620 - Sheet Metal Flashing and Trim: Product requirements for reglets for flashings for placement by this section.

##### 1.2 REFERENCES

- A. American Concrete Institute:
  - 1. ACI 530 - Building Code Requirements for Masonry Structures.
  - 2. ACI 530.1 - Specifications for Masonry Structures.
- B. ASTM International:
  - 1. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
  - 2. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
  - 3. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
  - 4. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
  - 5. ASTM A580/A580M - Standard Specification for Stainless Steel Wire.
  - 6. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
  - 7. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - 8. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement.
  - 9. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction.
  - 10. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
  - 11. ASTM C27 - Standard Classification of Fireclay and High-Alumina Refractory Brick.
  - 12. ASTM C34 - Standard Specification for Structural Clay Load-Bearing Wall Tile.
  - 13. ASTM C55 - Standard Specification for Concrete Brick.
  - 14. ASTM C56 - Standard Specification for Structural Clay Non-Load-Bearing Tile.
  - 15. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units Made From Clay or Shale).

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16. ASTM C67 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile.
17. ASTM C73 - Standard Specification for Calcium Silicate Face Brick (Sand-Lime Brick).
18. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units.
19. ASTM C126 - Standard Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units.
20. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units.
21. ASTM C140 - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
22. ASTM C212 - Standard Specification for Structural Clay Facing Tile.
23. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale).
24. ASTM C315 - Standard Specification for Clay Flue Linings.
25. ASTM C530 - Standard Specification for Structural Clay Non-Loadbearing Screen Tile.
26. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
27. ASTM C652 - Standard Specification for Hollow Brick (Hollow Masonry Units Made From Clay or Shale).
28. ASTM C744 - Standard Specification for Prefaced Concrete and Calcium Silicate Masonry Units.
29. ASTM C1261 - Standard Specification for Firebox Brick for Residential Fireplaces.
30. ASTM C1283 - Standard Practice for Installing Clay Flue Lining.
31. ASTM D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
32. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
33. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

### 1.3 PERFORMANCE REQUIREMENTS

- A. Concrete Masonry Compressive Strength (f<sub>m</sub>): 1,500 psi; determined by prism test method.
  1. Concrete Masonry Units: 1,900 psi minimum net area compressive strength.
- B. Reinforcing Steel: ASTM A615/A615M, 60 yield grade, deformed billet bars.

### 1.4 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Submittal requirements.
- B. Shop Drawings: Indicate bars sizes, spacings, locations, reinforcement quantities, bending and cutting schedules, supporting and spacing devices for reinforcement, and accessories.
- C. Product Data:
  1. Submit data for masonry units and fabricated wire reinforcement
- D. Design Data: Indicate required mortar strength, specified compressive strength of masonry, masonry unit assembly strength in each plane, and supportive test data.
- E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.



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### 1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 530 and ACI 530.1.
- B. Fire Rated Wall, Floor, and Roof Construction: Rating as indicated on Drawings
  - 1. Tested Rating: Determined in accordance with ASTM E119.
- C. Surface Burning Characteristics:
  - 1. Foam Insulation: Maximum 75/450 flame spread/smoke developed index when tested in accordance with ASTM E84.
- D. Apply label from agency approved by authority having jurisdiction to identify each foam plastic insulation insert.
- E. Maintain one copy of each document on site.

### 1.6 QUALIFICATIONS

- A. Installer: Company specializing in performing Work of this section with minimum three years' experience.

### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Section 01600 - Product Requirements: Product storage and handling requirements.
- B. Accept units on site. Inspect for damage.

### 1.8 ENVIRONMENTAL REQUIREMENTS

- A. Section 01600 - Product Requirements.
- B. Cold Weather Requirements: In accordance with ACI 530.1 when ambient temperature or temperature of masonry units is less than 40 degrees F.
- C. Hot Weather Requirements: In accordance with ACI 530.1 when ambient temperature is greater than 100 degrees F or ambient temperature is greater than 90 degrees F with wind velocity greater than 8 mph.

### 1.9 COORDINATION

- A. Section 01300 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate masonry work with other trades.

## PART 2 PRODUCTS

### 2.1 REINFORCED UNIT MASONRY ASSEMBLIES

- A. Manufacturers:

## LOVINGTON FIRE STATION # 2

1. Featherlite
2. Amcor Inc.
3. Best Block Co.
4. Betco Supreme.
5. Substitutions: Section 01600 - Product Requirements

B. Furnish materials in accordance with specifications and manufacture's recommendations.

### 2.2 COMPONENTS

A. Hollow Load Bearing Concrete Masonry Units (CMU): ASTM C90; normal weight.

B. Solid Load-Bearing Concrete Masonry Units (CMU): ASTM C90; normal weight.

### 2.3 ACCESSORIES

A. Single Wythe Joint Reinforcement: ASTM A951/A951M; truss type; steel; W1.7 side rods with W1.7 cross ties; hot dip galvanized.

B. Reinforcing Steel: ASTM A615/A615M, 60 ksi yield grade, deformed billet bars, uncoated finish.

C. Anchor Rods: ASTM F1554, Grade 36 complete with washers and heavy hex nuts.

1. Hot-Dipped Galvanizing: ASTM A153/A153M.
2. Mechanical Galvanizing: ASTM B695; Class 55.

D. Mortar and Grout: As specified in ACI 530.

E. Preformed Control Joints: Rubber material. Furnish with corner and tee accessories

F. Joint Filler: Closed rubber; oversized 50 percent to joint width; self expanding;

### 2.4 SOURCE QUALITY CONTROL

A. Section 01400 - Quality Requirements: Testing, inspection and analysis requirements.

B. Test brick efflorescence in accordance with ASTM C67. Brick rated greater than "slightly effloresced" is not acceptable.

## PART 3 EXECUTION

### 3.1 EXAMINATION

A. Section 01300 - Administrative Requirements: Coordination and project conditions.

B. Verify field conditions are acceptable and are ready to receive work.

C. Verify items provided by other sections of work are properly sized and located.

D. Verify built-in items are in proper location, and ready for roughing into masonry work.

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### 3.2 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied to other Sections.
- B. Furnish temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent support.

### 3.3 INSTALLATION

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form bed and head joints of uniform thickness.
- C. Coursing of Concrete Masonry Units:
  - 1. Bond: Running.
  - 2. Coursing: One unit and one mortar joint to equal 8 inches.
- D. Placing And Bonding:
  - 1. Lay solid masonry units in full bed of mortar, with full head joints.
  - 2. Remove excess mortar as Work progresses.
  - 3. Interlock intersections and external corners.
  - 4. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment is required, remove mortar and replace.
  - 5. Perform job site cutting of masonry units with proper tools to assure straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- E. Joint Reinforcement And Anchorage:
  - 1. Install horizontal joint reinforcement per drawings.
  - 2. Place masonry joint reinforcement in first horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
  - 3. Place joint reinforcement continuous in first joint below top of walls.
  - 4. Lap joint reinforcement ends minimum 6 inches.
  - 5. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
- F. Lintels:
  - 1. Do not splice reinforcing bars.
  - 2. Support and secure reinforcing bars from displacement.
  - 3. Place and consolidate grout fill without displacing reinforcing.
  - 4. Allow masonry lintels to attain specified strength before removing temporary supports.
- G. Grouted Components:
  - 1. Support and secure reinforcing bars from displacement.
  - 2. Place and consolidate grout fill without displacing reinforcing.
- H. Reinforced Masonry:
  - 1. Lay masonry units with cells vertically aligned and clear of mortar and unobstructed.
  - 2. Place reinforcing, reinforcement bars, and grout as indicated on Drawings.

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3. Splice reinforcement in accordance with Drawings
4. Support and secure reinforcement from displacement.
5. Place and consolidate grout fill without displacing reinforcing.
6. Place grout in accordance with ACI 530.1 Specification for Masonry Structures.

### I. Control Joints:

1. Install control joints as indicated on Drawings:
2. Do not continue horizontal joint reinforcement through control joints.
3. Install preformed control joint device in continuous lengths. Seal butt and corner joints.
4. Size control joint in accordance with Section 07900 for sealant performance.

## 3.4 ERECTION TOLERANCES

- A. Section 01400 - Quality Requirements: Tolerances.
- B. Maximum Variation From Alignment of 1/4 inch.
- C. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
- D. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
- E. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- F. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
- G. Maximum Variation of Joint Thickness: 1/8 inch in 3 ft.
- H. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.
- I. Maximum Variation for Steel Reinforcement:
  1. Install reinforcement within the tolerances specified in ACI 530.1 for foundation walls.
  2. Plus or minus 1/2 inch when distance from centerline of steel to opposite face of masonry is 8 inches or less.
  3. Plus or minus 1 inch when distance is between 8 and 24 inches.
  4. Plus or minus 1-1/4 inch when distance is greater than 24 inches.
  5. Plus or minus 2 inches from location along face of wall.

## 3.5 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Concrete Masonry Units: Test each type in accordance with ASTM C140.

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### 3.6 CLEANING

- A. Section 01700 - Execution Requirements: Final cleaning.
- B. Remove excess mortar and mortar smears as work progresses.
- C. Replace defective mortar. Match adjacent work.
- D. Clean soiled surfaces with cleaning solution.
- E. Use non-metallic tools in cleaning operations.

### 3.7 PROTECTION OF FINISHED WORK

- A. Section 01700 - Execution Requirements: Requirements for protecting finished Work.
- B. Protect exposed external corners subject to damage.
- C. Protect base of walls from mud and mortar splatter.
- D. Protect masonry and other items built into masonry walls from mortar droppings and staining caused by mortar.
- E. Protect tops of masonry work with waterproof coverings secured in place without damaging masonry. Provide coverings where masonry is exposed to weather when work is not in progress.

END OF SECTION

SECTION 042200 - CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Concrete masonry units.
  - 2. Decorative concrete masonry units.

1.2 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.3 SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For reinforcing steel. Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315.
- C. Samples: For each type and color of the following:
  - 1. **Decorative** CMUs.
  - 2. **colored-aggregate** mortar.

1.4 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For each type and size of product. For masonry units, include **data on material properties**
- B. Mix Designs: For each type of mortar. Include description of type and proportions of ingredients.
  - 1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91/C 91M for air content.
  - 2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.

## LOVINGTON FIRE STATION # 2

### 1.5 FIELD CONDITIONS

- A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
- B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

### PART 2 - PRODUCTS

#### 2.1 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.
- C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.
  - 1. Where fire-resistance-rated construction is indicated, units shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

#### 2.2 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
  - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
- B. CMUs: ASTM C 90.
  - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of **2150 psi**
  - 2. Density Classification: **Lightweight** Concrete building bricks are often used to adjust dimensions in CMU construction.
- C. Decorative CMUs: ASTM C 90.
  - 1. Superlite Block 4626 N. 42<sup>nd</sup> Avenue Phoenix, AZ 85019, Treadstone
  - 2. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of **2150 psi**.
  - 3. Density Classification: **Lightweight**.

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4. Pattern and Texture:
  - a. Standard pattern, ground-face finish. Treadstone. Opal

### 2.3 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150/C 150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Masonry Cement: ASTM C 91/C 91M.
- E. Aggregate for Mortar: ASTM C 144.
  1. White-Mortar Aggregates: Natural white sand or crushed white stone.
  2. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
- F. Aggregate for Grout: ASTM C 404.
- G. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
- H. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent from same manufacturer.
- I. Water: Potable.

### 2.4 REINFORCEMENT

- A. Uncoated-Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, **Grade 60**.
- B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from **0.148-inch** steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.
- C. Masonry-Joint Reinforcement, General: ASTM A 951/A 951M.
  1. Interior Walls: **Hot-dip** galvanized, carbon steel.
  2. Exterior Walls: **Hot-dip galvanized carbon** steel.
  3. Wire Size for Side Rods: **0.148-inch** diameter.
  4. Wire Size for Cross Rods: **0.148-inch** diameter.
  5. Spacing of Cross Rods: Not more than **16 inches** o.c.
  6. Provide in lengths of not less than **10 feet**, **with prefabricated corner and tee units**].



2.5 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M, with ASTM A 153/A 153M, Class B-2 coating.
  2. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.
  3. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
1. Anchor Section for Welding to Steel Frame: Crimped **1/4-inch** diameter, hot-dip galvanized-steel wire.
  2. Tie Section: Triangular-shaped wire tie made from **0.187-inch** diameter, hot-dip galvanized-steel wire.

2.6 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
1. Do not use calcium chloride in mortar or grout.
  2. Use **portland cement-lime** mortar unless otherwise indicated.
  3. For exterior masonry, use **portland cement-lime** mortar.
  4. For reinforced masonry, use **portland cement-lime** mortar.
  5. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C 270, **Proportion** Specification. Provide the following types of mortar for applications stated unless another type is indicated.
1. For masonry below grade or in contact with earth, use **Type S**.
  2. For reinforced masonry, use **Type S**.
  3. For mortar parge coats, use **Type S**.
  4. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type N.
  5. For interior nonload-bearing partitions, Type O may be used instead of Type N.
- D. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color.

## LOVINGTON FIRE STATION # 2

1. Application: Use colored-aggregate mortar for exposed mortar joints with the following units:
  - a. Decorative CMUs.
- E. Grout for Unit Masonry: Comply with ASTM C 476.
  1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION, GENERAL

- A. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

#### 3.2 TOLERANCES

##### A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus **1/2 inch** or minus **1/4 inch**.
2. For location of elements in plan, do not vary from that indicated by more than plus or minus **1/2 inch**.
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus **1/4 inch** in a story height or **1/2 inch** total.

##### B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than **1/4 inch in 10 feet**, or **1/2-inch** maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than **1/8 inch in 10 feet**, **1/4 inch in 20 feet**, or **1/2-inch** maximum.
3. For vertical lines and surfaces, do not vary from plumb by more than **1/4 inch in 10 feet**, **3/8 inch in 20 feet**, or **1/2-inch** maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than **1/8 inch in 10 feet**, **1/4 inch in 20 feet**, or **1/2-inch** maximum.
5. For lines and surfaces, do not vary from straight by more than **1/4 inch in 10 feet**, **3/8 inch in 20 feet**, or **1/2-inch** maximum.

##### C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus **1/8 inch**, with a maximum thickness limited to **1/2 inch**.

## LOVINGTON FIRE STATION # 2

2. For head and collar joints, do not vary from thickness indicated by more than plus  $3/8$  inch or minus  $1/4$  inch.
3. For exposed head joints, do not vary from thickness indicated by more than plus or minus  $1/8$  inch.

### 3.3 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- D. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- E. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.
- F. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

### 3.4 MORTAR BEDDING AND JOINTING

- A. Lay hollow CMUs as follows:
  1. Bed face shells in mortar and make head joints of depth equal to bed joints.
  2. Bed webs in mortar in all courses of piers, columns, and pilasters.
  3. Bed webs in mortar in grouted masonry, including starting course on footings.
  4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
- B. Lay solid CMUs with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

END OF SECTION 042200

SECTION 051200 - STRUCTURAL STEEL FRAMING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Structural shapes.
  - 2. Channels and angles.
  - 3. Hollow structural sections.
  - 4. Structural pipe.
  - 5. Structural plates and bars.
  - 6. Floor plates.
  - 7. Bolts, connectors, and anchors.
  - 8. Grout.

1.2 SUBMITTALS

- A. Shop Drawings: Indicate sizes, spacing, and locations of structural members, openings, connections, cambers, and welded connections.
- B. Fabricator Certification or summary of experience.
- C. Erector Certification or summary of experience.
- D. Welder Certifications

1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with the following:
  - 1. Structural Steel: ASIC 314 and AISC 360.
  - 2. Architecturally Exposed Structural Steel: AISC 303, Section 10.
  - 3. High Strength Bolted Connections: RCSC Specification for Structural Joints Using ASTM A 325 or A 490 Bolts.
  - 4. Steel Cable Structures: ASCE 19.
- B. Perform Work in accordance with AISC Code of Standard Practice, Current Edition.
- C. Steel fabricator shall either be certified by AISC with a Standard for Steel Building Structures Certification or demonstrate five years of experience fabricating similar structures.
- D. Steel Erector shall either be certified by AISC as a Certified Steel Erector or demonstrate five years of experience erecting similar structures.
- E. All welders performing full penetration or partial penetration welds shall be AWS certified to perform the types of welds required.
- F. Maintain one copy of each document on site.

PART 2 PRODUCTS

2.1 STRUCTURAL STEEL

- A. Structural W-Shapes: ASTM A992/A992M.
- B. Structural T-Shapes: Cut from structural W-shapes.
- C. Channels and Angles: ASTM A36/A36M.
- D. Round Hollow Structural Sections: ASTM A500/A500M, Grade B.
- E. Square and Rectangular Hollow Structural Sections: ASTM A500/A500M, Grade.
- F. Structural Pipe: ASTM A53/A53M, Grade B.
- G. Structural Plates and Bars: ASTM A36/A36M
- H. Structural Plates: ASTM A36/A36M
- I. Floor Plates: ASTM A786/A786M; raised pattern.
- J. Furnish materials in accordance with AISC Manual of Standard Practice, current edition.

2.2 BOLTS, CONNECTORS, AND ANCHORS

- A. Bolts: Heavy hex, structural type.
  - 1. ASTM A325
- B. Nuts: ASTM A563 heavy hex type.
  - 1. Finish: Plain.
- C. Washers: ASTM F436 Type 1, circular.
  - 1. Finish: Plain.
- D. Compressible-Washer-Type Direct Tension Indicators: ASTM F959; Type 325
  - 1. Finish: Plain.
- E. Tension Control Assemblies: ASTM F1852; Type 1, round head, twist off type; complete with washers and heavy hex nuts.
  - 1. Finish: Unfinished.
- F. Shear Connectors: ASTM A108; Grade 65, headed, unfinished and in accordance with AWS D1.1; Type B.
- G. Anchor Rods: ASTM F1554; Grade 36.
- H. Threaded Rods: ASTM A36/A36M.

## LOVINGTON FIRE STATION # 2

### 2.3 WELDING MATERIALS

- A. Welding Materials: AWS D1.1; type required for materials being welded.

### 2.4 FINISHES

- A. Prepare structural component surfaces in accordance with SSPC SP 3.
- B. Shop prime structural steel members. Do not prime surfaces that will be fireproofed, field welded, in contact with concrete, at slip critical bolts.
- C. Galvanizing: ASTM A123/A123M; hot dip galvanize after fabrication.
- D. Galvanizing for Bolts, Connectors, and Anchors:
  - 1. Hot-Dipped Galvanizing:
    - a. Bolts, Nuts, and Washers: ASTM F2329.
    - b. Connectors and Anchors: ASTM A153/A153M.
  - 2. Mechanical Galvanizing: ASTM B695; Class 50 minimum.

### 2.5 ACCESSORIES

- A. Grout: Non-shrink type, pre-mixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing additives, capable of developing minimum compressive strength of 7,000 psi at 28 days.
- B. Shop Primer: SSPC Paint 15, Type 1
- C. Touch-Up Primer: Match shop primer.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify bearing surfaces are at correct elevation.
- B. Verify anchors rods are set in correct locations and arrangements with correct exposure for steel attachment.

### 3.2 PREPARATION

- A. Furnish templates for installation of anchor rods and embedments in concrete and masonry work.

### 3.3 ERECTION

- A. Allow for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in alignment until completion of erection and installation of permanent bracing.

## LOVINGTON FIRE STATION # 2

- B. Field weld components and shear connectors indicated on Drawings.
- C. Do not field cut or alter structural members without approval of Architect/Engineer.
- D. After erection, touch up welds and abrasions to match shop finishes.

### 3.4 GROUT INSTALLATION

- A. Shim bearing plates and equipment supports to proper elevation, snug tighten anchor bolts.
- B. Fill void under bearing surface with grout. Install and pack grout to remove air pockets.
- C. Moist cure grout.
- D. Remove forms after grout is set. Trim grout edges to form smooth surface, splayed 45 degrees.
- E. Tighten anchor bolts after grout has cured for a minimum of 3 days.

### 3.5 FIELD QUALITY CONTROL

- A. Bolted Connections: Inspect in accordance with AISC 303.
  - 1. Visually inspect all bolted connections.
  - 2. For Direct Tension Indicators, comply with requirements of ASTM F959. Verify that gaps are less than gaps specified in Table 2.
- B. Welding:
  - 1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
  - 2. Visually inspect all welds.
  - 3. Ultrasonic Inspection: ASTM E164; perform on all full penetration welds.
- C. Correct defective bolted connections and welds.

END OF SECTION

SECTION 052100 - STEEL JOIST FRAMING

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes open web steel joists with bridging, attached seats and anchors.

1.2 SUBMITTALS

- A. Shop Drawings: Indicate configuration, sizes, spacing, locations of joists, joist leg extensions, bridging, connections, attachments, and cambers.

1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with the following:
  - 1. SJI K-1.1, SJI LH/DLH-1.1, and SJI JG-1.1, including headers and other supplementary framing.
  - 2. AISC 341 -Seismic Provisions for Structural Steel Buildings.
- B. Use SJI Load Tables, and Weight Tables, including headers and other supplementary framing.
- C. Design steel joists under direct supervision of Professional Engineer experienced in design of this Work and licensed at Project location.
- D. Perform Work in accordance with SJI Standards and Specifications.
- E. Maintain one copy of each document on site.

PART 2 PRODUCTS

2.1 STEEL JOISTS

- A. Open Web Joists Members: SJI Type K Open Web., Longspan LH, Deep Longspan DLH, and Joist Girders.
- B. Bolts: ASTM A325; plain; heavy hex, structural type.
- C. Nuts: ASTM A563 heavy hex type.
- D. Washers: ASTM F436
- E. Tension Control Assemblies: ASTM F1852; Type 1, round head, twist off type; complete with washers and heavy hex nuts.
- F. Shop Primer: SSPC Paint 15, Type 1.
- G. Touch-Up Primer: Match shop primer.



## LOVINGTON FIRE STATION # 2

H. Welding Materials: AWS D1.1; type required for materials being welded.

### 2.2 FABRICATION

A. Furnish bottom and top chord extensions as indicated on Drawings.

### 2.3 FINISHES

A. Prepare joist component surfaces in accordance with SSPC SP 2.

B. Shop prime joists

## PART 3 EXECUTION

### 3.1 EXAMINATION

A. Verify field conditions are acceptable and are ready to receive work.

### 3.2 ERECTION

A. Erect and bear joists on supports.

B. Allow for erection loads. Install temporary bracing to maintain framing in alignment until completion of erection and installation of permanent bridging and bracing.

C. After joist alignment, field weld joist seat to bearing surfaces.

D. Position and field weld joist chord extensions and wall attachments as detailed.

E. After erection, prime welds, abrasions, and surfaces not shop primed.

### 3.3 TOLERANCES

A. Maximum Variation From Plumb:  $\frac{1}{4}$  inch.

B. Maximum Offset from Alignment:  $\frac{1}{4}$  inch.

### 3.4 FIELD QUALITY CONTROL

A. Field inspection of members, connections, welds, and tightening of high strength bolts in slip-critical connections.

END OF SECTION

## LOVINGTON FIRE STATION # 2

### SECTION 053100 - STEEL DECKING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes steel deck and accessories; framing for openings up to and including 12 inches, pour stops, bearing plates and angles.

##### 1.2 SUBMITTALS

- A. Shop Drawings: Indicate decking plan, support locations, projections, openings and reinforcement, pertinent details, and accessories.
- B. Product Data: Deck profile characteristics and dimensions, structural properties, finishes, and load capacities.

##### 1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with ASCE 3 for composite decks.
- B. Perform Work in accordance with SDI Standards and Specifications.
- C. Maintain one copy of each document on site.

#### PART 2 PRODUCTS

##### 2.1 STEEL DECK

- A. Manufacturers:
  - 1. Vulcraft Steel Deck
  - 2. Wheeling Corrugating Co.
  - 3. Canam
  - 4. CSI
  - 5. Substitutions upon written request and written approval from Architect/Engineer.
- B. Sheet Steel: ASTM A653/A653M, Grade 33 Structural Quality; with coating as designated on plans.
- C. Welding Materials: AWS D1.1 and D1.3.
- D. Flute Closures: Closed cell foam rubber; profiled to fit tight to decking.

##### 2.2 FABRICATION

- A. Deck Accessories: Metal closure strips, wet concrete stops, cant strips, cover plates per size, thickness and finish as specified on plans.

## LOVINGTON FIRE STATION # 2

- B. Sump Pan: 14 gauge sheet steel.
- C. Fasteners: Hardened steel, galvanized, self tapping.
- D. Weld Washers: Mild steel, uncoated.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Verify field conditions are acceptable and are ready to receive work.

#### 3.2 INSTALLATION

- A. Erect metal decking in accordance with Steel Deck Institute Design Manual for Composite Decks, Form Decks, Roof Decks.
- B. Bear decking on masonry or concrete support surfaces with 4 inch minimum bearing. Align and level.
- C. Bear decking on steel supports with 1½ inch minimum bearing. Align and level.
- D. Fasten deck to steel support members at ends and intermediate supports per fasteners designated on plans. Attached deck sidelaps as designated on plans. Button punching of side laps is not acceptable.
- E. Weld in accordance with AWS D1.1 and D1.3.
- F. Install wet concrete stops at deck edge upturned to top surface of slab.
- G. Install sheet steel closures and angle flashings to close openings between deck and walls, columns, and openings.
- H. Install single row of foam flute closures above walls and partitions perpendicular to deck flutes.
- I. Position roof sump pans with flange bearing on top surface of deck. Attach at each deck flute.
- J. Place metal cant strips in position and attach.
- K. Immediately after welding deck and other metal components in position, coat welds, weld blooms, burned areas, and damaged surface coating, with touch-up prime paint.

#### 3.3 FIELD QUALITY CONTROL

- A. Welding: Inspect welds in accordance with AWS D1.1.

END OF SECTION

## LOVINGTON FIRE STATION # 2

### SECTION 054000 - COLD-FORMED METAL FRAMING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes load bearing formed steel stud, framing and formed steel joist, purlin, slotted channel, and framing and bridging.

##### 1.2 SUBMITTALS

- A. Product Data:
  - 1. Cold Formed Shapes: Provide manufacture, structural properties, steel grade, finish and profiles
  - 2. Accessories: Provide manufacture, structural properties, steel grade, finish and profiles
  - 3. Mechanical Fasteners: Provide manufacture and structural properties.

##### 1.3 QUALITY ASSURANCE

- A. Calculate structural properties of framing members in accordance with AISI NAS.
- B. Furnish framing materials in accordance with SSMA - Product Technical Information.
- C. Perform Work in accordance with the following:
  - 1. Framing: AISI General and AISI NAS.
  - 2. Headers: AISI Header.
  - 3. Trusses: AISI Truss.
  - 4. Wall Studs: AISI WSD.
  - 5. Lateral Design: AISI Lateral.
- D. Maintain one copy of each document on site.

#### PART 2 PRODUCTS

##### 2.1 COLD FORMED METAL FRAMING

- A. Manufacturers:
  - 1. Clark Steel Framing Systems.
  - 2. Steel Elements.
  - 3. Marino\Ware.
  - 4. Unimast Incorporated.
  - 5. Dietrich
  - 6. Substitutions: Permitted upon written approval.

##### 2.2 FRAMING COMPONENTS

- A. Steel Sheet: ASTM A1003/A1003M; Structural Grade, Type H, metallic coated

## LOVINGTON FIRE STATION # 2

1. Grade: ST33H or ST50H as designated on plans.
2. Coating: G60

- B. Studs: Steel sheet, formed to channel shape with punched webs
- C. Joists, Purlins and Headers: Steel sheet, formed to channel shape, with solid or punched webs
- D. Track: Steel sheet, formed to channel shape; same width as studs, tight fit. Provide solid web tracks that attach to concrete or metal deck and punched web tracks at slip track conditions.

### 2.3 ACCESSORIES

- A. Bracing, Furring, Bridging, Plates, Gussets, Clips: Formed sheet steel, thickness determined by performance requirements specified; same finish as framing members.
- B. Screws: Hot dip galvanized, self drilling, self tapping.
- C. Anchorage Devices: Power actuated.
- D. Welding: In accordance with AWS D1.1 and AWS D1.3.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify building framing components are ready to receive work.

### 3.2 ERECTION OF STUDS

Align floor and ceiling tracks; locate to wall layout. Secure in place per plans.

- A. Place studs at spacing designated in plans; not more than 2 inches from abutting walls and at each side of openings. Connect studs to tracks using 2-No.10 self-tapping screws.
- B. Construct corners using minimum three studs. Double stud wall openings, door and window jambs.
- C. Erect load bearing studs one piece full length. Splicing of studs is not permitted.
- D. Allow for deflection, directly below horizontal building framing for non-load bearing framing.
- E. Attach furring channels to studs for attachment of fixtures anchored to walls and for attachment of mechanical and electrical items within walls.
- F. Touch-up field welds and damaged metallic coatings surfaces with primer to match shop coating.

## LOVINGTON FIRE STATION # 2

### 3.3 ERECTION OF JOISTS, PURLINS, AND HEADERS

- A. Make provisions for erection stresses. Provide temporary alignment and bracing.
- B. Set components parallel and level, with lateral bracing and bridging.
- C. Locate component end bearing directly over load bearing studs or provide load distributing member to top of stud track.
- D. Provide web stiffeners as designated on plans
- E. Touch-up field welds and damaged metallic coatings with primer to match shop coating.

### 3.4 TOLERANCES

- A. Maximum Variation from Indicated Position: 1/8 inch.
- B. Maximum Variation of Member from Plane: 1/8 inch in 10 feet.

END OF SECTION

## LOVINGTON FIRE STATION # 2

### SECTION 055000 - METAL FABRICATIONS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Miscellaneous steel framing and supports.
2. Metal ladders.
3. Metal bollards.
4. Hairpin door stop
5. Bicycle Rack

##### 1.2 SUBMITTALS

- A. Shop Drawings: Show fabrication and installation details. **Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.**
- B. Delegated-Design Submittal: For ladders, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

#### PART 2 - PRODUCTS

##### 2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design ladders.
- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

##### 2.2 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Rolled-Steel Floor Plate: ASTM A 786/A 786M, rolled from plate complying with ASTM A 36/A 36M or ASTM A 283/A 283M, Grade C or D.

## LOVINGTON FIRE STATION # 2

- D. Steel Tubing: ASTM A 500/A 500M, cold-formed steel tubing.
- E. Steel Pipe: ASTM A 53/A 53M, Standard Weight (Schedule 40) unless otherwise indicated.

### 2.3 FASTENERS

- A. General: Unless otherwise indicated, provide **Type 316** stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or **ASTM F 1941**, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
  - 1. Provide stainless-steel fasteners for fastening aluminum.
  - 2. Provide stainless-steel fasteners for fastening stainless steel.
  - 3. Provide stainless-steel fasteners for fastening nickel silver.
  - 4. Provide bronze fasteners for fastening bronze.
- B. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.
- C. Post-Installed Anchors: [**Torque-controlled expansion anchors**.
  - 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or **ASTM F 1941**, Class Fe/Zn 5, unless otherwise indicated.

### 2.4 MISCELLANEOUS MATERIALS

- A. Shop Primers: Provide primers that comply with **Section 099113 "Exterior Painting."** **Section 099123 Interior Painting."**
- B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
  - 1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- C. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

### 2.5 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Use connections that maintain structural value of joined pieces.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges. Remove sharp or rough areas on exposed surfaces.
- C. Weld corners and seams continuously to comply with the following:



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1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  2. Obtain fusion without undercut or overlap.
  3. Remove welding flux immediately.
  4. At exposed connections, finish exposed welds and surfaces smooth and blended.
- D. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Locate joints where least conspicuous.
- E. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- F. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors not less than **8 inches** from ends and corners of units and **24 inches** o.c.

### 2.6 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
- C. Fabricate steel girders for wood frame construction from continuous steel shapes of sizes indicated.
1. Where wood nailers are attached to girders with bolts or lag screws, drill or punch holes at **24 inches** o.c.
- D. Fabricate steel pipe columns for supporting wood frame construction from steel pipe with steel baseplates and top plates as indicated. Drill or punch baseplates and top plates for anchor and connection bolts and weld to pipe with fillet welds all around. Make welds the same size as pipe wall thickness unless otherwise indicated.

### 2.7 METAL LADDERS

- A. General:
1. Comply with ANSI A14.3.
  2. For elevator pit ladders, comply with ASME A17.1/CSA B44.
- B. Steel Ladders:
1. Space siderails **18 inches** apart unless otherwise indicated.
  2. Siderails: Continuous, **1/2-by-2-1/2-inch** steel flat bars, with eased edges.

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3. Rungs: **3/4-inch-diameter** steel bars.
4. Fit rungs in centerline of siderails; plug-weld and grind smooth on outer rail faces.
5. Provide nonslip surfaces on top of each rung.
6. Prime ladders, including brackets and fasteners, with **primer specified in Section 099113 and Section 099123**

### 2.8 METAL BOLLARDS

- A. Fabricate metal bollards from **Schedule 40 steel pipe 1/4-inch (6.4-mm) wall-thickness steel tubing**.
  1. Cap bollards with **1/4-inch-** thick steel plate.
- B. Fabricate bollards with **3/8-inch-** thick steel baseplates for bolting to concrete slab. Drill baseplates at all four corners for **3/4-inch** anchor bolts.
- C. Prime bollards with **primer specified in Section 099113**

### 2.9 HAIRPIN DOOR STOP

- A. Acceptable Manufacturer: **Huntco Site Furnishings**, which is located at: P. O. Box 10385; Portland, OR 97296; Toll Free Tel: 800-547-5909; Tel: 503-224-8700; Fax: 503-274-2055; Email: [request info](mailto:request%20info@huntco.com) ([sales@huntco.com](mailto:sales@huntco.com)); Web: [www.huntco.com](http://www.huntco.com)
- B. Materials
  1. Mild Steel, Schedule 40 steel pipe; 2-3/8 inch OD x .154 inch wall
- C. Finishes
  1. Hot dipped galvanized.

### 2.10 BICYCLE RACK

- A. Fabricated from Schedule 40 steel pipe, fully welded together.
  1. Fabricate with NPS 3 (DN 80) top rails and end posts, NPS 1 -1/2 (DN 40) bottom rails, and NPS 3/4 (DN 20) vertical separators at approximately 8 inches o.c.
  2. Make top rails 36 inches above pavement and bottom rails 4 inches above pavement.
  3. Fabricate end posts with 1/4 inches thick steel base plates for bolting to concrete slab. Drill end post base plates at all 4 corners for 1/2 inch anchor bolts
  4. Finish: prime with zinc-rich primer and paint.

### 2.11 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.
- B. Shop prime iron and steel items unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.

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1. Shop prime with **primers specified in Section 099113 "Exterior Painting"** or **primers specified in Section 099123 "Interior Painting"** indicated.
- C. Preparation for Shop Priming: Prepare surfaces to comply with
1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  2. Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  3. Items Indicated to Receive Primers Specified in Section 099600 "High-Performance Coatings": SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  4. Other Items: SSPC-SP 3, "Power Tool Cleaning."
- D. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Field Welding: Comply with the following requirements:
1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  2. Obtain fusion without undercut or overlap.
  3. Remove welding flux immediately.
  4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

#### 3.2 INSTALLING METAL BOLLARDS

- A. Fill metal-capped bollards solidly with concrete and allow concrete to cure seven days before installing.

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- B. Anchor bollards to existing construction with [**expansion anchors**] [**anchor bolts**] [**through bolts**]. Provide four **3/4-inch** bolts at each bollard unless otherwise indicated.
- C. Anchor bollards in concrete [**with pipe sleeves preset and anchored into concrete**] [**in formed or core-drilled holes**]. Fill annular space around bollard solidly with nonshrink grout.
- D. Anchor bollards in place with concrete footings. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.
- E. Fill bollards solidly with concrete, mounding top surface to shed water.

### 3.3 INSTALLING BEARING AND LEVELING PLATES

- A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.
- B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with nonshrink grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

### 3.4 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

END OF SECTION 055000

SECTION 055213 - PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Steel **pipe and tube** railings.

1.2 SUBMITTALS

- A. Product Data: For the following:
  - 1. Manufacturer's product lines of mechanically connected railings.
  - 2. Railing brackets.
  - 3. Grout, anchoring cement, and paint products.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Samples: For each type of exposed finish required.
- D. Product Test Reports: For pipe and tube railings, for tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
  - 1. Handrails and Top Rails of Guards:
    - a. Uniform load of **50 lbf/ ft.** applied in any direction.
    - b. Concentrated load of **200 lbf** applied in any direction.
    - c. Uniform and concentrated loads need not be assumed to act concurrently.
  - 2. Infill of Guards:
    - a. Concentrated load of **50 lbf** applied horizontally on an area of **1 sq. ft.**
    - b. Infill load and other loads need not be assumed to act concurrently.

## LOVINGTON FIRE STATION # 2

### 2.2 METALS, GENERAL

- A. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

### 2.3 STEEL AND IRON

- A. Tubing: **ASTM A 500 (cold formed) or ASTM A 513.**
- B. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
  - 1. Provide galvanized finish for exterior installations and where indicated.
- C. Plates, Shapes, and Bars: ASTM A 36/A 36M.
- D. Cast Iron: Either gray iron, ASTM A 48/A 48M, or malleable iron, ASTM A 47/A 47M, unless otherwise indicated.

### 2.4 FASTENERS

- A. General: Provide the following:
  - 1. Ungalvanized-Steel Railings: Plated steel fasteners complying with ASTM B 633 or **ASTM F 1941**, Class Fe/Zn 5 for zinc coating.
  - 2. Hot-Dip Galvanized Railings: Type 304 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A 153/A 153M or ASTM F 2329 for zinc coating.
- B. Post-Installed Anchors: **Torque-controlled expansion anchors** capable of sustaining, without failure, a load equal to 6 times the load imposed when installed in unit masonry and 4 times the load imposed when installed in concrete, as determined by testing according to ASTM E 488/E 488M, conducted by a qualified independent testing agency.
  - 1. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633 or **ASTM F 1941**, Class Fe/Zn 5, unless otherwise indicated.

### 2.5 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Etching Cleaner for Galvanized Metal: Complying with MPI#25.
- C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- D. Shop Primers: Provide primers that comply with **Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."**

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- E. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
- F. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.
- G. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.
- H. Epoxy Intermediate Coat: Complying with MPI #77 and compatible with primer and topcoat.
- I. Polyurethane Topcoat: Complying with MPI #72 and compatible with undercoat.
- J. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.
- K. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

### 2.6 FABRICATION

- A. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately **1/32 inch** unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- B. Form work true to line and level with accurate angles and surfaces.
- C. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove flux immediately.
  - 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- D. Welded Connections for Aluminum Pipe: Fabricate railings to interconnect members with concealed internal welds that eliminate surface grinding, using manufacturer's standard system of sleeve and socket fittings.
- E. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
- F. Form changes in direction **by inserting prefabricated elbow fittings**.
- G. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- H. Close exposed ends of railing members with prefabricated end fittings.

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- I. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated.
- J. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
  - 1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.

### 2.7 STEEL AND IRON FINISHES

- A. Galvanized Railings:
  - 1. Hot-dip galvanize **exterior** steel railings, including hardware, after fabrication.
  - 2. Comply with ASTM A 123/A 123M for hot-dip galvanized railings.
  - 3. Comply with ASTM A 153/A 153M for hot-dip galvanized hardware.
- B. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.
- C. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with **SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."**
- D. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.
  - 1. Do not apply primer to galvanized surfaces.
- E. High-Performance Coating: Apply epoxy intermediate and polyurethane topcoats to prime-coated surfaces. Comply with coating manufacturer's written instructions and with requirements in SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel," for shop painting. Apply at spreading rates recommended by coating manufacturer.
  - 1. Color: **As selected by Architect from manufacturer's full range.**

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
  - 1. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
  - 2. Set posts plumb within a tolerance of **1/16 inch in 3 feet**.



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3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed **1/4 inch in 12 feet**.
- B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
  1. Coat, with a heavy coat of bituminous paint, concealed surfaces of aluminum that are in contact with grout, concrete, masonry, wood, or dissimilar metals.

### 3.2 ATTACHING RAILINGS

- A. Attach railings to wall with wall brackets, **except where end flanges are used**. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
- B. Secure wall brackets and railing end flanges to building construction as follows:
  1. For hollow masonry anchorage, use toggle bolts.

### 3.3 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 requirements for touching up shop-painted surfaces.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas, and repair galvanizing to comply with ASTM A 780/A 780M.

END OF SECTION 055213

## LOVINGTON FIRE STATION # 2

### SECTION 061053 - MISCELLANEOUS ROUGH CARPENTRY

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Framing with dimension lumber.
2. Rooftop equipment bases and support curbs.
3. Wood blocking and nailers.
4. Wood furring.
5. Wood sleepers.
6. Utility shelving.
7. Plywood backing panels.

##### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product.

#### PART 2 - PRODUCTS

##### 2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.

- B. Maximum Moisture Content of Lumber: **15 percent for 2-inch nominal** unless otherwise indicated.

##### 2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Preservative Treatment by Pressure Process: AWWPA U1; Use Category UC2 **for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.**

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. **Do not use inorganic boron (SBX) for sill plates.**

- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.

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- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Application: Treat **all miscellaneous carpentry unless otherwise indicated.**
  - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
  - 2. Wood sills, sleepers, blocking, **furring, stripping**, and similar concealed members in contact with masonry or concrete.
  - 3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
  - 4. Wood framing members that are less than **18 inches** above the ground in crawlspaces or unexcavated areas.
  - 5. Wood floor plates that are installed over concrete slabs-on-grade.

### 2.3 FIRE-RETARDANT-TREATED MATERIALS

- A. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than **10.5 feet** beyond the centerline of the burners at any time during the test.
  - 1. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
  - 2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
  - 3. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D 5664, and design value adjustment factors shall be calculated according to ASTM D 6841.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.
- C. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.
- D. Application: Treat **items indicated on Drawings, and the following:**

### 2.4 DIMENSION LUMBER FRAMING

- A. Non-Load-Bearing Interior Partitions: [**Construction or No. 2**] [**Construction, Stud, or No. 3**] [**Standard, Stud, or No. 3**] grade of any species.
- B. Other Framing: **Construction or No. 2** grade of species:
  - 1. Southern pine or mixed southern pine; SPIB.

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2. Hem-fir (north); NLGA.
3. Douglas fir-larch; WCLIB or WWPA.

### 2.5 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
  1. Blocking.
  2. Nailers.
  3. Rooftop equipment bases and support curbs.
  4. Cants.
  5. Furring.
  6. Grounds.
  7. Utility shelving.
- B. Dimension Lumber Items: **Construction or No. 2** grade lumber of any species.
- C. Utility Shelving: Lumber with **15** percent maximum moisture content of eastern white pine, Idaho white, lodgepole, ponderosa, or sugar pine; **Premium or No. 2 Common** grade; NeLMA, NLGA, WCLIB, or WWPA.
- D. Concealed Boards: 15 percent maximum moisture content of **[any of the following] [the following]** species and grades:
  1. Mixed southern pine or southern pine, **No. 2** grade; SPIB.
  2. Eastern softwoods, **No. 2 Common** grade; NELMA.
  3. Northern species, [**No. 2 Common** grade; NLGA.
  4. Western woods, **Construction or No. 2 Common** grade; WCLIB or WWPA.

### 2.6 PLYWOOD BACKING PANELS

- A. Equipment Backing Panels: Plywood, DOC PS 1, **Exposure 1, C-D Plugged**, in thickness indicated or, if not indicated, not less than **1/2-inch** nominal thickness.

### 2.7 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
  1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners **with hot-dip zinc coating complying with ASTM A 153/A 153M**.
- B. Screws for Fastening to Metal Framing: **ASTM C 1002** or **ASTM C 954**, length as recommended by screw manufacturer for material being fastened.

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- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

### 2.8 MISCELLANEOUS MATERIALS

- A. Adhesives for Gluing **Furring and Sleepers** to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.
- B. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, **butyl rubber** compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than **0.025 inch (0.6 mm)**.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry accurately to other construction. Locate **furring**, nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- C. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels.
- D. Do not splice structural members between supports unless otherwise indicated.
- E. Comply with AWWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- F. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
  - 1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
  - 2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.
  - 3. ICC-ES evaluation report for fastener.

### 3.2 PROTECTION

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

END OF SECTION 061053

## LOVINGTON FIRE STATION # 2

### SECTION 062023 - INTERIOR FINISH CARPENTRY

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Interior trim.
2. Interior plywood, hardboard, board paneling.
3. Shelving and clothes rods.

###### B. Related Requirements:

1. Section 064300 "Wood Stairs and Railings."
2. Section 099123 "Interior Painting" for priming and backpriming of interior finish carpentry.

##### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product.
- B. Sustainable Design Submittals:
- C. Samples: For each type of paneling.

##### 1.3 QUALITY ASSURANCE

- A. [Look at Chaparral Elementary](#)

#### PART 2 - PRODUCTS

##### 2.1 MATERIALS, GENERAL

- A. Lumber: DOC PS 20.
  1. Factory mark each piece of lumber with grade stamp of grading agency.
  2. For exposed lumber, mark grade stamp on end or back of each piece.
- B. Softwood Plywood: DOC PS 1.
- C. Hardboard: ANSI A135.4.
- D. MDF: ANSI A208.2, Grade 130

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- E. Particleboard: ANSI A208.1, Grade M-2, Grade M-2-Exterior Glue.
- F. Melamine-Faced Particleboard: Particleboard complying with ANSI A208.1, Grade M-2, finished on both faces with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD3, Grade VGL, for test methods 3.3, 3.4, 3.6, 3.8, and 3.10.
  - 1. Color: As selected by Architect from manufacturer's full range.

### 2.2 FIRE-RETARDANT-TREATED MATERIALS

- A. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than **10.5 feet** beyond the centerline of the burners at any time during the test.
  - 1. Kiln dry lumber and plywood after treatment to a maximum moisture content of 19 and 15 percent, respectively.
- B. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.
  - 1. For exposed lumber and plywood indicated to receive a stained or natural finish, mark back of each piece.

### 2.3 INTERIOR TRIM

### 2.4 PANELING

### 2.5 SHELVING AND CLOTHES RODS

### 2.6 STAIRS AND RAILINGS

### 2.7 MISCELLANEOUS MATERIALS

- A. Low-Emitting Materials: Adhesives shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- B. Glue: Aliphatic-resin, polyurethane, or resorcinol wood glue recommended by manufacturer for general carpentry use.
- C. Paneling Adhesive: Comply with paneling manufacturer's written recommendations for adhesives.

## LOVINGTON FIRE STATION # 2

- D. Multipurpose Construction Adhesive: Formulation complying with ASTM D 3498 that is recommended for indicated use by adhesive manufacturer.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Before installing interior finish carpentry, condition materials to average prevailing humidity in installation areas for a minimum of 24 hours.

#### 3.2 INSTALLATION, GENERAL

- A. Install interior finish carpentry level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.
  1. Scribe and cut interior finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
  2. Where face fastening is unavoidable, countersink fasteners, fill surface flush, and sand unless otherwise indicated.
  3. Install to tolerance of **1/8 inch in 96 inches** for level and plumb. Install adjoining interior finish carpentry with **1/32-inch** maximum offset for flush installation and **1/16-inch** maximum offset for reveal installation.
  4. Install stairs with no more than **3/16-inch** variation between adjacent treads and risers and with no more than **3/8-inch** variation between largest and smallest treads and risers within each flight.

#### 3.3 STANDING AND RUNNING TRIM INSTALLATION

- A. Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than **24 inches** long, except where necessary. Stagger joints in adjacent and related standing and running trim. Miter at returns, miter at outside corners, and cope at inside corners to produce tight-fitting joints with full-surface contact throughout length of joint. Use scarf joints for end-to-end joints.

#### 3.4 PANELING INSTALLATION

- A. Plywood Paneling: Select and arrange panels on each wall to minimize noticeable variations in grain character and color between adjacent panels. Leave **1/4-inch** gap to be covered with trim at top, bottom, and openings. Install with uniform tight joints between panels.
  1. Attach panels to supports with manufacturer's recommended panel adhesive and fasteners. Space fasteners and adhesive as recommended by panel manufacturer.
  2. Conceal fasteners to greatest practical extent.
- B. Hardboard Paneling: Install according to manufacturer's written recommendations. Leave **1/4-inch** gap to be covered with trim at top, bottom, and openings. Butt adjacent panels with moderate contact. Use fasteners with prefinished heads matching paneling color.



## LOVINGTON FIRE STATION # 2

- C. Board Paneling: Arrange in random-width pattern suggested by manufacturer unless boards or planks are of uniform width.
  - 1. Install in full lengths without end joints.
  - 2. Stagger end joints in random pattern to uniformly distribute joints on each wall.
  - 3. Select and arrange boards on each wall to minimize noticeable variations in grain character and color between adjacent boards. Install with uniform tight joints between boards.
  - 4. Fasten paneling by face nailing, setting nails, and filling over nail heads.
  - 5. Fasten paneling with trim screws, set below face and filled.
  - 6. Fasten paneling by blind nailing through tongues.

### 3.5 SHELVING AND CLOTHES ROD INSTALLATION

- A. .STAIR AND RAILING INSTALLATION

END OF SECTION 062023

SECTION 064116 - PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wood furring, blocking, shims, and hanging strips for installing plastic-laminate-faced architectural cabinets unless concealed within other construction before cabinet installation.
2. Miscellaneous Materials

1.2 SUBMITTALS

A. Product Data: For each type of product, **including panel products and cabinet hardware and accessories.**

B. Sustainable Design Submittals:

C. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

D. Samples:

1. Plastic laminates, for each color, pattern, and surface finish.
2. Thermoset decorative panels, for each color, pattern, and surface finish.
3. Solid surface countertop finish
4. Drawer pulls, slides and hinges

1.3 QUALITY ASSURANCE

A. Fabricator Qualifications: **Certified participant in AWI's Quality Certification Program.**

B. Installer Qualifications: **Certified participant in AWI's Quality Certification Program.**

1.4 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install cabinets until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 WOOD MATERIALS

- A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.
  - 1. Wood Moisture Content: **8 to 13** percent.
- B. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.
  - 1. Medium-Density Fiberboard: ANSI A208.2, **Grade 130**.
  - 2. Particleboard: ANSI A208.1, **Grade M-2**.
  - 3. Softwood Plywood: DOC PS 1, **medium-density overlay**].
  - 4. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.
  - 5. Thermoset Decorative Panels: Particleboard or medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for test methods 3.3, 3.4, 3.6, 3.8, and 3.10.

2.2 FIRE-RETARDANT-TREATED MATERIALS

- A. Fire-Retardant-Treated Materials, General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
  - 1. Identify fire-retardant-treated materials with appropriate classification marking of qualified testing agency in the form of removable paper label or imprint on surfaces that will be concealed from view after installation.
- B. Fire-Retardant-Treated Lumber and Plywood: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than **10.5 feet** beyond the centerline of the burners at any time during the test.
  - 1. Kiln dry lumber and plywood after treatment to a maximum moisture content of 19 and 15 percent, respectively.

2.3 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: **Softwood or hardwood lumber**, kiln dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

## LOVINGTON FIRE STATION # 2

C. Adhesive for Bonding Plastic Laminate: **Unpigmented contact cement.**

1. Adhesive for Bonding Edges: Hot-melt adhesive.

### 2.4 SOLID-SURFACE-MATERIAL COUNTERTOPS

A. Solid Surface Material: Homogeneous solid sheets of filled plastic resin complying with ANSI SS1.

1. Manufacturers: Subject to compliance with requirements, [**provide products by one of the following**

- a. Avonite Surfaces.
- b. E. I. du Pont de Nemours and Company.
- c. Formica Corporation.
- d. LG Chemical, Ltd.
- e. Meganite Inc.
- f. Samsung Chemical USA, Inc.
- g. Swan Corporation (The).
- h. Transolid, Inc.
- i. Wilsonart International.

2. Colors and Patterns: **As selected by Architect from manufacturer's full range**].

B. Configuration: Provide countertops with the following front and backsplash style:

1. Front: **Straight, slightly eased at top**
2. Backsplash: **Straight, slightly eased at corner**
3. Endsplash: **None.**

C. Countertops: **1-1/4-inch** thick, solid surface material **with front edge built up with same material.**

D. Backsplashes: **3/4-inch** thick, solid surface material.

### 2.5 FABRICATION

A. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

B. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

C. Install glass to comply with applicable requirements in Section 088000 "Glazing" and in GANA's "Glazing Manual." For glass in wood frames, secure glass with removable stops.

## LOVINGTON FIRE STATION # 2

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Before installation, condition cabinets to average prevailing humidity conditions in installation areas.

#### 3.2 INSTALLATION

- A. Grade: Install cabinets to comply with same grade as item to be installed.
- B. Install cabinets level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of **1/8 inch in 96 inches**.
- C. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- D. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails[ **or finishing screws**] for exposed fastening, countersunk and filled flush with woodwork.
- E. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
  - 1. Install cabinets with no more than **1/8 inch in 96-inch** sag, bow, or other variation from a straight line.
  - 2. Fasten wall cabinets through back, near top and bottom, and at ends not more than **16 inches** o.c. with [**No. 10 wafer-head screws sized for not less than 1-1/2-inch penetration into wood framing, blocking, or hanging strips**] [**No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish**] [**toggle bolts through metal backing or metal framing behind wall finish**].

END OF SECTION 064116

SECTION 066400 - PLASTIC PANELING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes glass-fiber reinforced plastic (FRP) wall paneling and trim accessories

1.2 SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For plastic paneling **and trim accessories**.

PART 2 - PRODUCTS

2.1 PLASTIC SHEET PANELING

- A. Glass-Fiber-Reinforced Plastic Paneling: Gelcoat-finished, glass-fiber-reinforced plastic panels complying with ASTM D 5319.
  - 1. Crane Composites, Sequentia Products.
  - 2. Kemlite Company inc.
  - 3. Marlite.
  - 4. Nudo Products, Inc.
  - 5. Surface-Burning Characteristics: As follows when tested by a qualified testing agency according to ASTM E 84. Identify products with appropriate markings of applicable testing agency.
    - a. Flame-Spread Index: **200** or less.
    - b. Smoke-Developed Index: 450 or less.
  - 6. Nominal Thickness: Not less than **0.09 inch**.
  - 7. Surface Finish: **Molded pebble texture**.
  - 8. Color: **As selected by Architect from manufacturer's full range**.

2.2 ACCESSORIES

- A. Trim Accessories: Manufacturer's standard one-piece vinyl extrusions designed to retain and cover edges of panels. Provide division bars, inside corners, **outside corners,**] and caps as needed to conceal edges.

## LOVINGTON FIRE STATION # 2

1. Color: **Match panels**
- B. Sealant: **single-component, neutral-curing silicone** sealant recommended by plastic paneling manufacturer and complying with requirements in Section 079200 "Joint Sealants."

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Clean substrates of substances that could impair adhesive bond, including oil, grease, dirt, and dust.
- B. Condition panels by unpacking and placing in installation space before installation according to manufacturer's written recommendations.
- C. Lay out paneling before installing. Locate panel joints **to provide equal panels at ends of walls not less than half the width of full panels**

#### 3.2 INSTALLATION

- A. Install plastic paneling according to manufacturer's written instructions.
- B. Install panels in a full spread of adhesive.
- C. Install trim accessories with **adhesive**
- D. Fill grooves in trim accessories with sealant before installing panels, and bed inside corner trim in a bead of sealant.
- E. Maintain uniform space between panels and wall fixtures. Fill space with sealant.
- F. Remove excess sealant and smears as paneling is installed. Clean with solvent recommended by sealant manufacturer and then wipe with clean dry cloths until no residue remains.

END OF SECTION 066400

SECTION 072100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Extruded polystyrene foam-plastic board.
2. Polyisocyanurate foam-plastic board.
3. Glass-fiber blanket.

1.2 INFORMATIONAL SUBMITTALS

A. Product test reports

B. Research reports.

1.3 QUALITY ASSURANCE

A. Source Limitations: Provide each type of building insulation and related accessories from one single manufacturer.

B. Installer Qualifications:

1. Contractor shall provide evidence of certification by the rigid insulation manufacturer as having been properly trained in the proper installation of the submitted products.

C. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency

D. Assembly Fire Propagation Characteristics: Provide results of tests performed on wall assemblies tested by manufacturer in accordance with NFPA 285.

E. Pre-installation Meeting: Prior to start of insulation installation review and document insulation installation methods and procedures including:

1. Participants
2. Substrate conditions
3. Manufacturers installation guidelines
4. Construction schedule
5. Governing regulatory requirements and requirements for insurance
6. Review field quality control procedures



PART 2 - PRODUCTS

2.1 EXTRUDED POLYSTYRENE FOAM-PLASTIC BOARD

- A. Board, Type IV: ASTM C 578, Type IV, 25-psi minimum compressive strength; unfaced; maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E 84.
  - 1. Available Manufactures:
    - a. Dow, STYROFOAM Brand Scoreboard Extruded Polystyrene Foam Insulation,
    - b.
  - 2. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

2.2 POLYISOCYANURATE FOAM-PLASTIC BOARD

- A. Fiberglass faced, Polyisocyanurate Board Insulation: ASTM C1289, Type I, Class 1, with maximum flame-spread and smoke-developed indexes of  $\leq 25$  and  $\leq 450$ , respectively, per ASTM E84.
  - 1. Minimum Compressive Strength  $\geq 20$  psi when tested per ASTM D1621
  - 2. Minimum Tensile Strength  $\geq 1000$  when tested per ASTM C209
  - 3. Minimum Flexural Strength 40 psi when tested per ASTM C203
  - 4. Water Vapor Transmission  $\leq 0.95$  perms per inch when tested per ASTM E96
  - 5. Water Absorption Maximum  $\leq 0.1277\%$  by volume when tested per ASTM C209
  - 6. Dimensional Stability, Maximum  $\leq 2\%$  length and width, and  $\leq 3.0\%$  thickness when tested per ASTM D212
- A. Adhesive for Bonding Insulation: Polyurethane construction adhesive with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates and as recommended by insulation manufacturer. Acceptable products include:
  - 1. LN 950 as manufactured by Liquid Nails Adhesive 15885 West Sprague Road, Strongsville, OH 44136 Phone: (800) 634-0015 Email: liquidnails@akzonobel.com
  - 2. Architect's approved equal.
- B. Available Manufactures:
  - a. Dow, THERMAX (ci) Exterior Insulation
  - b. Firestone, Enverge CI Exterior Wall Insulation
- 2. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

2.3 GLASS-FIBER BLANKET

- A. Glass-Fiber Blanket, Unfaced: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

## LOVINGTON FIRE STATION # 2

1. Available Manufactures:
  - a. CertainTeed Corporation.
  - b. Guardian Fiberglass, Inc.
  - c. Johns Manville.
  - d. Knauf Fiber Glass.
  - e. Owens Corning.

B. Where glass-fiber blanket insulation is indicated by the following thicknesses, provide blankets in batt or roll form with thermal resistances indicated:

1. 3-1/2 inches (89 mm) thick to be used in interior partitions where STC rating is indicated or where partitions are identified as "acoustical."
2. 5-1/2 inches (140 mm) thick with a thermal resistance of 19 deg F x h x sq. ft./Btu at 75 deg F (3.3 K x sq. m/W at 24 deg C; R-19

### 2.4 ACCESSORIES

- A. Insulation for Miscellaneous Voids:
  1. Spray Polyurethane Foam Insulation: ASTM C 1029, Type II, closed cell, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E 84.
- B. Insulation Anchors, Spindles, and Standoffs: As recommended by manufacturer.
- C. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.
- D. Eave Ventilation Troughs: Preformed, rigid fiberboard or plastic sheets designed and sized to fit between roof framing members and to provide ventilation between insulated attic spaces and vented eaves.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- D. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

## LOVINGTON FIRE STATION # 2

- E. Water-Piping Coordination: If water piping is located within insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping

### 3.2 INSTALLATION OF SLAB INSULATION

- A. On vertical slab edge and foundation surfaces, set insulation units using manufacturer's recommended adhesive according to manufacturer's written instructions.
  - 1. If not otherwise indicated, extend insulation a minimum of **24 inches** below exterior grade line. Install Extruded Polystyrene Foam Insulation below grade.

### 3.3 INSTALLATION OF FOUNDATION WALL INSULATION

- A. Butt panels together for tight fit.
- B. Anchor Installation: Install board insulation on concrete substrates by adhesively attached, spindle-type insulation anchors.
- C. Adhesive Installation: Install with adhesive or press into tacky waterproofing or dampproofing according to manufacturer's written instructions.

### 3.4 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

- A. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:
  - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
  - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
  - 3. Maintain **3-inch** clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
  - 4. Attics: Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
  - 5. For metal-framed wall cavities where cavity heights exceed **96 inches**, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
  - 6. For wood-framed construction, install blankets according to ASTM C 1320 and as follows:
    - a. With faced blankets having stapling flanges, lap blanket flange over flange of adjacent blanket to maintain continuity of vapor retarder once finish material is installed over it.
  - 7. Vapor-Retarder-Faced Blankets: Tape joints and ruptures in vapor-retarder facings, and seal each continuous area of insulation to ensure airtight installation.

## LOVINGTON FIRE STATION # 2

- a. Exterior Walls: Set units with facing placed toward **interior of construction**.
  - b. Interior Walls: Set units with facing placed **areas of high humidity**
- B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
1. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

### 3.5 INSTALLATION FOAM-PLASTIC BOARD

#### A. PREPARATION

1. Clean substrates of substances that are harmful to insulation including removing projections capable of puncturing foil facer, or that interfere with insulation attachment

#### B. INSTALLATION, GENERAL

1. Install insulation with the long edge horizontal and either side to the exterior.
2. Install in as large of pieces as possible to minimize joints.
3. Offset successive courses of insulation by a minimum of one stud space in framed installations or 16 inches in solid back-up installations.
4. Abut wall insulation tightly together both horizontally and vertically, and at all openings.
5. Comply with insulation manufacturer's written installation instructions.
6. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
7. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
8. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths.
9. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.
  - a. Stagger successive layers a minimum of 16" both vertically and horizontally so joints in successive layers do not align.

#### C. INSTALLATION ON MASONRY BACK-UP

1. Adhesive Installation:
  - a. Install pads of adhesive spaced approximately 24 inches o.c. both ways on inside face, and as recommended by adhesive manufacturer.
  - b. Fit courses of insulation between wall ties and other obstructions, with edges butted tightly in both directions. Press units firmly against inside substrates.
  - c. Supplement adhesive attachment of insulation by securing boards with plastic masonry fasteners at 24" o.c. both horizontal and vertical.
2. Mechanical Fastener Installation:
  - a. Fasten insulation to mock-up using manufacturer's acceptable integral plastic washers and fasteners as applicable for type of back-up and insulation thickness.
  - b. Fit courses of insulation between wall ties and other obstructions, with edges butted tightly in both directions. Press units firmly against inside substrates.
  - c. Install field fasteners at 12" o.c. vertically and 16" o.c. horizontally.

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- d. Install edge fasteners at 12" o.c. around perimeter of each board.

### D. INSTALLATION OF INSULATION FOR FRAMED CONSTRUCTION

1. Comply with manufacturer's written instructions.
2. Fasten insulation to framing using manufacturer's acceptable screws and washers as applicable for type of framing.
  - a. Install field fasteners at 12" o.c. vertically and 16" o.c. horizontally.
  - b. Install edge fasteners at 12" o.c. around perimeter of each board.

### E. PROTECTION

1. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.
2. Do not leave continuous insulation uncovered and exposed to UV for longer than an aggregate of 60 days between storage and uncovered installation.

END OF SECTION 072100

## LOVINGTON FIRE STATION # 2

### SECTION 072413 - POLYMER-BASED EXTERIOR INSULATION AND FINISH SYSTEM (EIFS)

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Installation of an acrylic modified skim coat of basecoat, an embedment of a fiberglass mesh, a sandable basecoat followed by a primer and acrylic based finish.

##### 1.2 PREINSTALLATION MEETINGS

- ###### A. Preinstallation Conference: Conduct conference at.

##### 1.3 SUBMITTALS

- ###### A. Product Data: For each EIFS component, trim, and accessory.
- ###### B. Samples: For each exposed product and for each color and texture specified.

##### 1.4 QUALITY ASSURANCE

- ###### A. Installer Qualifications: An installer certified in writing by EIFS manufacturer as qualified to install manufacturer's system using trained workers.
- ###### B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, to set quality standards for materials and execution, and to set quality standards for fabrication and installation.
1. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

#### PART 2 - PRODUCTS

##### 2.1 MANUFACTURERS

- ###### A. Basis of design, Parex Inc., 4125 E. La Palma Ave., Suite 250, Anaheim, CA 92807 (866-516-0061) contact: Andy Townes or [andy.townes@parexusa.com](mailto:andy.townes@parexusa.com)
- ###### B. Source Limitations: Obtain EIFS from single source from single EIFS manufacturer and from sources approved by EIFS manufacturer as tested and compatible with EIFS components.

## LOVINGTON FIRE STATION # 2

### 2.2 PERFORMANCE REQUIREMENTS

- A. EIFS Performance: Comply with ASTM E 2568 **and ICC-ES AC219** and with the following:
1. Weathertightness: Resistant to water penetration from exterior.
  2. Impact Performance: ASTM E 2568, **Standard** impact resistance.
  3. Bond Integrity: Free from bond failure within EIFS components or between EIFS and substrates, resulting from exposure to fire, wind loads, weather, or other in-service conditions.

### 2.3 MATERIAL

- A. Base Coats:
1. Parex 121 wet: 100% acrylic polymer basecoat, requiring the addition of Portland cement
- B. Reinforcing Mesh
1. Parex 355 Standard Mesh: Weight 4.5 oz. per sq. yd. (153 g/sq m); coated for protection against alkali. Standard reinforcement
- C. Sandable Basecoat:
1. Parex/Variance Tuscan Sandable acrylic based leveling coat. An acrylic based material designed for sanding in order to achieve a smooth and uniform surface for smooth coating applications.
- D. Finish Coating:
1. Primer: Tinted to the same color as the finish.
  2. Parex Aquasol: Self-cleaning acrylic based coating with hydrophobic properties. Texture and color as selected by Project Designer, two coats may be required.
- F. Water: Clean, cool, potable water.
- G. Portland Cement: ASTM C 150, Type I or Type I-II
- H. Related Materials and Accessories
1. Sealant for expansion joints between panelized DAFS sections shall be ultra-low modulus designed for minimum 100% elongation and minimum 50% compression and as selected by Project Designer.
  2. Sealant for perimeter seals around window and door frames and other wall penetrations shall be low modulus, designed for minimum 50% elongation and minimum 25% compression, and as selected by Project Designer.
  3. Sealants shall conform to ASTM C 920, Grade NS.
  4. Expansion joints between sections of EIFS shall have a minimum width of 3/4 in (19 mm).
  5. Perimeter seal joints shall be a minimum width of 1/2 in (12.7 mm).
  6. Sealant backer rod shall be closed-cell polyethylene foam.
  7. Apply sealant to base coat of DAFS.
  8. E.I.F.S. Drip Screed, Fry Reglet, Non-vented 3/4" DS-75-v-75

PART 3 - EXECUTION

3.1 APPLICATION

- A. Apply base coat and fully embed mesh in base coat; include diagonal mesh patches at corners of openings and reinforcing mesh patches at joints of track sections and sheathing seams.
- B. Sandable Base/skim coat: Apply at a nominal thickness of 1/8" and in order to completely cover basecoat and allow for sanding to a 1/8" in 10 feet tolerance. Additional layers of sandable basecoat may be required to level and cover any cold joints, staging marks, mesh pattern, etc
- C. Primer and Finish Coating: Once the approved surface flatness is achieved, Apply primer and finish coating with spray equipment in a number of coats and consistency to match approved sample.
- D. Finish to match specified finish type, texture, and color. Do not apply finish coat to surfaces to receive sealant. Keep finish out of sealant joint gaps.
- E. Contact manufacturer and arrange for any specific methods and application techniques to be followed. Specialty finishes may require special training and certificates of training are required.
- F. Colors and Texture: As selected by Architect from manufactures' full range.

END OF SECTION 072413



SECTION 072726 - FLUID-APPLIED MEMBRANE AIR BARRIERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Vapor-permeable, fluid-applied air barriers.

1.2 PREINSTALLATION MEETINGS

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

1.3 SUBMITTALS

- A. Product Data: For each type of product.

- B. Shop Drawings: For air-barrier assemblies.

1. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

- B. Mockups: Build mockups to set quality standards for materials and execution.

1. Build integrated mockups of exterior wall assembly, 150 sq. ft., incorporating backup wall construction, external cladding, window, storefront, door frame and sill, insulation, ties and other penetrations, and flashing to demonstrate surface preparation, crack and joint treatment, application of air barriers, and sealing of gaps, terminations, and penetrations of air-barrier assembly.

- a. Coordinate construction of mockups to permit inspection and testing of air barrier before external insulation and cladding are installed.
- b. Include junction with roofing membrane, **building corner condition, and foundation wall intersection.**

PART 2 - PRODUCTS

- A.

2.2 PERFORMANCE REQUIREMENTS

2.3 AIR BARRIERS, VAPOR PERMEABLE

- A. 100% acrylic based, spray and roll-on air and water-resistive barrier membrane. Designed for use as an air and water-resistive barrier behind EIFS and other claddings. This product is installed over glass mat gypsum sheathing, cement board sheathing, CDX plywood, OSB\*, concrete or CMU. *\*The system is qualified for application to OSB (oriented strand board) sheathing only in areas shown in the manufacturer's Acceptable Substrates and Areas of use Technical Bulletin*
- B. Functional Criteria:
  - 1. General:
    - a. Flashing: Flashing must be continuous and watertight. Flashing must be designed and installed to prevent water infiltration behind EIFS and other claddings. Refer to Division 07 Flashing Section for specified flashing materials.
    - b. The configuration of the air & water-resistive barrier, drainage plane, flashing and cladding assembly materials must allow for the egress of incidental moisture.
  - 2. Performance Requirements:
    - a. System to meet the performance and testing requirements of the International Code Council Acceptance Criteria AC 212 and ASTM E2570.

Parex USA Weatherseal Spray & Roll-on	Method	ICC and ASTM E2570 Criteria	Results
Accelerated Weathering	AC 212	25 Cycles followed by Hydrostatic Pressure Test: No water penetration on the plane of the exterior facing side of the substrate.	Pass: No water penetration
Air Infiltration	ASTM E2178	Calculated flow Rate at 75 Pa (1.57 lb/ft <sup>2</sup> , 0.3 in H <sub>2</sub> O) = < 0.02 L/m <sup>2</sup> *s (< 0.004 cfm/ft <sup>2</sup> )	< .00001 L/m <sup>2</sup> *s (0.00001 cfm/ft <sup>2</sup> ) at 75 Pa (1.57 lb/ft <sup>2</sup> , 0.3 in H <sub>2</sub> O)
Air Leakage of Air Barrier Assemblies	ASTM E2357	Pass < 0.2 L / s·m <sup>2</sup> at 75 Pa) (< 0.04 cfm / ft <sup>2</sup> at 1.57 psf)	Pass
Air Leakage	ASTM E283	No Criteria	< 0.004 cfm/ft <sup>2</sup>
Elongation	ASTM D412	No Criteria	360%
Flexibility	ASTM D522	No Criteria	No Cracking at 1/8" (3 mm)
Freeze-Thaw Resistance	ASTM E 2485	10 Cycles	Pass: No Deleterious Effects
Hydrostatic Pressure Test	AATCC 127 (Water Column)	Resist 21.6 in (55 cm) water for 5 hours before and after aging	No water penetration before and after aging
Nail Seal ability, Head of Water	ASTM D1970	Pass 5 inches of water	Pass
Evaluation of Fire Propagation	NFPA 285	In Accordance with IBC Chapter 26	Meets requirements for use on all Types of

Lovington Fire Statin #2

			construction
Radiant heat exposure	NFPA 268	In Accordance with IBC Chapter 26	No ignition upon 20 minute radiant heat exposure at 1.25 w/cm2.
Pull off Strength	ASTM D 4541	No Water Penetration	Pass: No water penetration
Racking	ASTM E72	Deflection at 1/8 in (3.2 mm)	Pass -No cracking at field, joints or flashing connection
Structural Loading	ASTM E1233 Procedure A	10 Cycles @ 80% design load	Pass: No cracking at field, joints or flashing connection
Restrained Environmental	ICC ES AC 212 / ASTM E2570	5 Cycles of wetting and drying	Pass: No cracking at field, joints or flashing connection
Surface Burning Characteristics	ASTM E84	ICC and ASTM E2568 Flame Spread <25 Smoke Developed <450	Flame Spread =0 Smoke Developed =0
Tensile Bond Strength	ASTM E 2134/ ASTM C 297	Minimum 15 psi (104 kPa)	Pass: All listed substrates and flashing materials
Water Resistance	ASTM D 2247	14 Days	Pass: No Deleterious Effects
Water Penetration	ASTM E331	2.86 psf (137 Pa) for 15 minutes	Pass 25.4 psf (1216 Pa) for 165 minutes
Water Penetration	ASTM E331	Tested after Structural Loading, Racking and Restrained Environmental Cycling at 2.86 psf (137 Pa) for 15 minutes	No Water Penetration
Water Vapor Transmission	ASTM E96 Procedure B	Vapor Permeable	12.0 perms
Weathering	ICC ES AC 212 / ASTM E2570	210 hours of UV Exposure, 25 cycles of accelerated weatherin, 21.6 in (549 mm) water column for 5 hours	Pass
Wind Driven Rain	F.S. TT-C-555B	No Criteria	Pass
VOC	EPA Reference Test Method 24	US EPA, South Coast AQMD and Greenseal Standard	10 /L

2.4 MANUFACTURERS

- A. Manufacturer, Basis of Design: Parex USA, Inc., 4125 E. La Palma Ave., Suite 250, Anaheim, CA 92807 Contact: Architectural Sales (866.516.0061) or Technical Support (800.226.2424).
- B. Components: Obtain components from authorized distributors. No substitutions or additions of other materials are permitted without prior written permission from Parex USA for this project.

## 2.5 MATERIALS

### A. Water-Resistive Membrane & Air Barrier Coating:

1. Parex USA Weatherseal Spray & Roll-on™: 100% acrylic, elastomeric waterproof membrane and air barrier that can be either roller, brush or spray applied.
2. Parex USA 396 Sheathing Tape: Non-woven synthetic fiber tape to reinforce the membrane at sheathing board joints, into rough openings and other terminations into dissimilar materials.
3. Parex USA 365 Flashing Membrane: Self sealing, polyester faced, rubberized asphalt membrane, 30 mils (0.76mm) thick.
4. Additional coats can be applied according to some manufacturers to increase the total thickness.
5. Additional coats can be applied according to some manufacturers to increase the total thickness; consult manufacturer for the effect this will have on vapor permeability.

## 2.4 ACCESSORY MATERIALS

- A. Requirement: Provide primers, transition strips, termination strips, joint reinforcing fabric and strips, joint sealants, counterflashing strips, flashing sheets and metal termination bars, termination mastic, substrate patching materials, adhesives, tapes, foam sealants, lap sealants, and other accessory materials that are recommended in writing by air-barrier manufacturer to produce a complete air-barrier assembly and that are compatible with primary air-barrier material and adjacent construction to which they may seal.

## PART 3 - EXECUTION

### 3.1 SURFACE PREPARATION

- A. Clean, prepare, treat, fill, and seal substrate and joints and cracks in substrate according to manufacturer's written instructions and details. Provide clean, dust-free, and dry substrate for air-barrier application.
- B. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.
- C. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate-patching material.
- D. Remove excess mortar from masonry ties, shelf angles, and other obstructions.
- E. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.

- F. Bridge isolation joints expansion joints and discontinuous wall-to-wall, deck-to-wall, and deck-to-deck joints with air-barrier accessory material that accommodates joint movement according to manufacturer's written instructions and details.

### 3.2 EXAMINATION

- A. Verify project site conditions under provisions of Section 01 00 00.
- B. Compliance: Comply with manufacturer's instructions for installation.
- C. Substrate Examination: Examine prior to water-resistive membrane and air barrier installation as follows:
  - 1. Substrate must be of a type approved by water-resistive membrane and air barrier manufacturer. Plywood and OSB substrates must be gapped 1/8 in (3.2mm) at all edges. Plywood and OSB substrates cut edges (non-factory edges) must be sealed with a water-resistive coating.
  - 2. Substrate must be examined for soundness, and other harmful conditions.
  - 3. Substrate must be free of dust, dirt, laitance, efflorescence, and other harmful contaminants.
  - 4. Substrate construction in accordance with substrate material manufacturer's specifications and applicable building codes.
  - 5. Maximum deflection of the substrate must be determined by the requirements of the exterior cladding.
- D. Flashing: Flashing must be installed prior to the water-resistive membrane & air barrier coating material and integrated with the wall field membrane to create positive drainage.
- E. Advise Contractor of discrepancies preventing proper installation of the water-resistive membrane & air barrier coating material. Do not proceed with the work until unsatisfactory conditions are corrected.

### 3.4 PREPARATION

- 3.5 Protection: Protect surrounding material surfaces and areas during installation of system.
- 3.6 Clean surfaces thoroughly prior to installation.
- 3.7 Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### 3.5 MIXING

- 3.8 Mix water-resistive membrane & air barrier materials in accordance with manufacturer's instructions.

### 3.6 APPLICATION

- G. General: Installation shall conform to this specification and manufacturer's written instructions.
  - 1. Flash all rough openings with water-resistive & air barrier coating material embedded with sheathing tape.
  - 2. Treat all sheathing joints, inside and outside corners and all exposed edges at terminations with water-resistive membrane & air barrier coating material and embed sheathing tape.
  - 3. Embed 4 inch strips of Sheathing Joint tape by applying water-resistive membrane and air barrier coating. Apply per application instructions to approximately 6 inches of each

- side of the joint and completely embed reinforcing fabric with a trowel or taping knife so that the color of the fabric is not visible.
4. Apply water-resistive membrane & air barrier coating to the entire surface of the substrate.
    - a. Roller Application: Use a 3/4 inch to 1-1/4 inch (19-32mm) or 1-3/8 inch (35mm) nap roller designed for applying latex paints.
    - b. Spray Application: Spray apply the membrane at a rate of not more than 100 ft<sup>2</sup> per gallon (2.4 m<sup>2</sup> per liter).
  5. Ensure that the water-resistive membrane & air barrier coating laps onto all tracks and flashing to allow for any incidental moisture to be drained into the track/flashing.
  6. Allow water-resistive membrane & air barrier coating to completely dry before proceeding with additional layers of the assembly.

### 3.2 CLEANING AND PROTECTION

- A. Protect air-barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.
- B. Remove masking materials after installation.

### 3.5 PROTECTION

- A. Provide protection of installed materials from water infiltration into or behind them.
- B. Provide protection of installed materials from dust, dirt, precipitation, freezing during installation, and continuous high humidity until fully cured and dry.
- C. Clean exposed surfaces using materials and methods recommended by the manufacturer of the material or product being cleaned. Remove and replace work that cannot be cleaned to the satisfaction of the Project Designer/Owner.

END OF SECTION 072726

SECTION 074113.16 - STANDING-SEAM METAL ROOF PANELS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes standing-seam metal roof panels.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at project site.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's data sheets on each product to be installed and manufacturer's standard detail drawings applicable to this project.
  - a. Installation Instructions: Provide manufacturer's instructions to installer, marked up to show exactly how all components will be installed; where instructions allow installation options, clearly indicate which option will be used.
- B. Samples: Submit following samples for approval:
  - 1. 12 inch (300 mm) long sample of roof panel.
  - 2. Roof attachment clips.
  - 3. Color chips for selection of finish color and sheen.
  - 4. After selection of finish color, provide two 3 by 5 inch (75 by 125 mm) metal samples finished in color selected.
- C.
- D. Warranties: Sample of special warranties.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of work.

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### 1.6 WARRANTY

- A. Comply with all warranty procedures required by manufacturer, including notifications, scheduling, and inspections
- B. Manufacturer's warranty is in addition to, and not a limitation of, other rights the owner may have under the contract documents.
- C. Warranty: Firestone Red Shield Limited Warranty covering roof panels and associated metal components, roof sheathing/insulation manufactured by Firestone, and accessories, covering weathertightness, finish, materials, labor, and workmanship.
  - 1. Limit of Liability: No dollar limitation.
  - 2. Ordinary wear and tear of the elements.
  - 3. Manufacturing defect in Firestone brand materials.
  - 4. Defective workmanship used to install these materials.
  - 5. Damage due to winds up to 55 mph.
  - 6. Not Covered
    - a. Materials made by entities other than Firestone Building Products
    - b. Damage due to winds in excess of 55 mph.
    - c. Damage due hurricanes or tornadoes.
    - d. Hail.
    - e. Intentional damage.
    - f. Unintentional damage due to normal rooftop inspections, maintenance, or service
- D. Painted Finish Warranty: Provide Firestone standard Red Shield non-prorated warranty covering durability of painted finish, to include film integrity, color change, fading, and chalking, unless otherwise indicated below.
  - 1. Warranty Period: 25 years commencing on date of substantial completion.
  - 2. Metallic Colors (as identified by Firestone): Not warranted against color change or fading.
  - 3. Firestone Standard Color "Regal Red": Warranted against color change or fading for a maximum period of ten (10) years.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Energy Performance: Provide roof panels that are listed on the EPA/DOE's ENERGY STAR "Roof Product List" for **[low]** **[steep]**-slope roof products.
- B. Energy Performance: Provide roof panels according to one of the following when tested according to CRRC-1:
  - 1. Three-year, aged solar reflectance of not less than **[0.55]** and emissivity of not less than **0.75**.
  - 2. Three-year, aged Solar Reflectance Index of not less than **64** when calculated according to ASTM E 1980.



## LOVINGTON FIRE STATION # 2

- C. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:
  - 1. Wind Loads: As indicated on Drawings.
  - 2. Other Design Loads:
  - 3. Deflection Limits: For wind loads, no greater than **1/180** of the span.
- D. Air Infiltration: Air leakage of not more than **0.06 cfm/sq. ft.** when tested according to ASTM E 1680 at the following test-pressure difference:
  - 1. Test-Pressure Difference: **1.57 lbf/sq. ft.**
- E. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 1646[ **or ASTM E 331**] at the following test-pressure difference:
  - 1. Test-Pressure Difference: **2.86 lbf/sq. ft.**
- F. Hydrostatic-Head Resistance: No water penetration when tested according to ASTM E 2140.
- G. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.
  - 1. Uplift Rating: **UL 90.**
- H. FM Global Listing: Provide metal roof panels and component materials that comply with requirements in FM Global 4471 as part of a panel roofing system and that are listed in FM Global's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
  - 1. Fire/Windstorm Classification: Class 1A-**90.**
  - 2. Impact Resistance: Minimum of Class 4, when tested in accordance with UL 2218
- I. Thermal Effects: Design roof panels and their attachment to allow free movement in response to expansion and contraction forces resulting from temperature variation, as specified in the MBMA Metal Roofing Systems Design Manual

### 2.2 STANDING-SEAM METAL ROOF PANELS

- A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.
  - 1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1514.
- B. ROOF PANELS

## LOVINGTON FIRE STATION # 2

1. Roof Panels: Firestone UNA-CLAD UC-6 Standing Seam Roofing; roll formed roofing panels produced in a permanent factory environment with fixed-base roll-forming equipment.
  - a. Seam Height: 2 inches (50.8 mm).
  - b. Seam Spacing (Panel Width): 18 inches
  - c. Profile: Striations
  - d. Texture: Smooth
  - e. Clips: As tested and supplied by manufacturer.
  - f. Form roofing panels in longest practical lengths, true to shape, accurate in size, square, and free from distribution or manufacturing defects.
2. Steel Sheet: ASTM A653/A653M, lock-forming quality, extra smooth, tension-leveled, galvanized/galvannealed steel, minimum spangle.
3. Fluoropolymer Coating: 70 percent full strength Kynar 500/Hylar 5000.
  - a. Exposed Surface: 1.0 mil (0.25 mm) plus/minus 0.1 mil (0.025 mm) total dry film thickness.
  - b. Concealed Surface: 0.2 to 0.3 mils (0.05 to 0.08 mm) total dry film thickness.
  - c. Color: To be selected from manufacturer's standard and premium colors.
4. Sheet Metal Components Associated with Metal Roof Panels: Made by same manufacturer and compatible with roof panels; of not less than minimum thickness required by roof panel manufacturer.
  - a. Fabricate trim, flashing, and accessories to roofing manufacturer's specified or approved profiles.
  - b. Exposed metal components of same finish as panels.
  - c. Color: Same as panels.
  - d. Provide the following formed sheet metal components
    - i. Eave.
    - ii. Ridge.
    - iii. High eave.
    - iv. Rake edge.

### 2.3 UNDERLAYMENT MATERIALS

### 2.4 MISCELLANEOUS MATERIALS

- A. Miscellaneous Metal Subframing and Furring: ASTM C 645; cold-formed, metallic-coated steel sheet, ASTM A 653/A 653M, **G90 (Z275 hot-dip galvanized)** coating designation or ASTM A 792/A 792M, **Class AZ50 (Class AZM150)** coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.
- B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
  1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
  2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.

3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum **1-inch- (25-mm-)** thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.
- D. Panel Fasteners: Self-tapping screws designed to withstand design loads.
- E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing; **1/2 inch (13 mm)** wide and **1/8 inch (3 mm)** thick.
  2. Joint Sealant: ASTM C 920; as recommended in writing by metal panel manufacturer.
  3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

## 2.5 FABRICATION

- A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.
- C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- D. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- E. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.

3.2 UNDERLAYMENT INSTALLATION

- A. Not Applicable

3.3 METAL PANEL INSTALLATION

- A. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.
  - 1. Install clips to supports with self-tapping fasteners.
  - 2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
  - 3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
  - 4. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.
  - 5. Watertight Installation:
    - a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend in writing by manufacturer as needed to make panels watertight.
    - b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
    - c. At panel splices, nest panels with minimum **6-inch** end lap, sealed with sealant and fastened together by interlocking clamping plates.
- B. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
- C. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

3.4 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On

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completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

END OF SECTION 074113.16

SECTION 074213.13 - FORMED METAL WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Concealed-fastener, lap-seam metal wall panels.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at **Project site**.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
- C. Samples: for initial selections: Manufacturer's color charts showing the full range of colors available for units with factory-applied color finishes.
- D. Samples for verification: Provide color samples of selected color. Samples shall involve normal color and texture variations, include sample sets showing the full range of variations expected

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of work.

1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.

## LOVINGTON FIRE STATION # 2

1. Warranty Period: **Two** years from date of Substantial Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
  1. Finish Warranty Period: **20** years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Structural performance: provide exterior/interior wall cladding assemblies capable of withstanding the effects of load and stresses from dead loads, wind loads, snow loads and normal thermal movement without evidence of permanent defects of assemblies or components.
  1. Dead load: As required by applicable building code.
  2. Live Load: As required by applicable building code.
  3. Wind Load: Uniform pressure (velocity pressure) of (Insert Design Criteria) lb/sq ft. (Insert Design Criteria), acting inward or outward.
  4. Thermal Movements: Provide assemblies that allow for thermal movements resulting from the following maximum changes (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components and other detrimental effects
  5. Temperature Change (range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
    - A. This system wall panel system, as specified by 2006 International Building Code – 1403.2, must be an air and water resistant barrier. The design of the air and water resistant barrier shall be completed by a qualified air and water membrane specialist.\*
    - B. Sealed joints shall allow free and silent movement of panels during expansion and contraction while preventing uncontrolled penetration of moisture.
    - C. Manufacturing and installation shall prevent deformation of exposed surfaces.
    - D. Design panel system to accommodate substructure tolerance of +0 to -1/8 inch.
    - E. Not Permitted: Vibration harmonics; wind whistles; noises caused by thermal movement; thermal movement transmitted to other building elements; loosening, weakening or fracturing of attachments or components of system.
    - F. Structural Performance / Uniform Load Deflection Test: Provide panel system which has been tested in accordance with ASTM E330 at a design pressure of at least 60 psf without deformation or failures of structural members. Maximum allowable deflection of span: L/180.
    - G. Panels shall be tested in accordance with ASTM E1592 structural testing at load span of at least 5'-0" o.c. and shall perform at a design

pressure of no less than 35 psf without deformation or failures of structural members.

- H. Air Infiltration: Panel system shall not have air infiltration rate more than 0.06 cfm per sq. ft. of fixed wall area when tested in accordance with ASTM E283 at static air pressure differential of 6.24 psf.
- I. Static Water Penetration: Panel system shall have no water penetration as defined by in test method when tested in accordance with ASTM E331. The ASTM E331 test shall be conducted at inward static pressure differential of not less than 15.0 psf.
- J. Dynamic Water Penetration: Panel system shall have been tested in accordance with AAMA 501 and shall have passed with no uncontrolled water leakage at 15.00 psf dynamic pressure differential, with water application rate of 5 gallons/hr/sqft

## 2.2 CONCEALED-FASTENER, LAP-SEAM METAL WALL PANELS

- A. Manufacturers: Subject to compliance with requirements, provide products manufactured by:
  - 1. Firestone Building Products, 1001 Lund Blvd., Anoka, MN 55330 Phone 800-426-7737, Fax 763-576-9596,
    - a. Delta Series concealed fastener wall panels.
    - b.
- B. General: Provide factory-formed metal panels designed to be field assembled by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners in side laps. Include accessories required for weathertight installation.
- C. Panel system for wall shall be Delta Series panels manufactured by Firestone Metal Products.
  - 1. Delta Series panel profiles shall be:
    - a. CFP-12 (From top of masonry 2 courses)
    - b. CFP-16T (3 courses)
    - c. CFP-162C (3 courses)
    - d. CFP-12F (To underside of soffit)
      - a. Panels shall be 7/8 inches in depth and coverage shall be 12 and 16 inches.
  - 1. The panels shall have an interlocking side lap feature which conceals the fasteners and is installed using clips to allow for thermal movement. Clips shall be designed to hold the panel 1/2" minimum from exterior sheathing to create a drainage plane and ventilation cavity. Load span tables must include evaluation of clip and side joint interaction.
  - 2. The panels shall have factory applied sealant concealed within the interlocking joint.
  - 3. Panels shall have common interlocking side joints to allow for multiple panel profile combinations.
  - 4. Exposed panel fasteners are unacceptable.



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- D. Steel Panels: ASTM A653, G90 (lock-forming quality), extra smooth, tension-leveled, galvanized steel, minimum spangle.
  - 1. Thickness: 24 gauge.
  - 2. Texture: Panels shall be smooth
- E. Panel system for fascia shall be UC-500 soffit panels
  - 1. Steel Panels: ASTM A653, G90 (lock-forming quality), extra smooth, tension-leveled, galvanized steel, minimum spangle.
  - 2. Thickness: 24 gauge.
  - 3. Panel Width: 12 inches.
- F. Roof edge system shall be AnchorGard Platinum HG Fascia
  - 1. Fascia width 5 ½"
  - 2. Color to match metal wall panel at Fascia

### 2.3 MISCELLANEOUS MATERIALS

- A. Miscellaneous Metal Subframing and Furring: ASTM C 645, cold-formed, metallic-coated steel sheet, ASTM A 653/A 653M, non-corrosive coating designation or ASTM A 792/A 792M, Provide manufacturer's standard sections as required for support and alignment of metal panel system.
- B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
  - 1. Closures: Provide closures at eaves and rakes, fabricated of same metal as metal panels.
  - 2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
  - 3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.
- D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.
- E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

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1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing; 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
2. Joint Sealant: ASTM C 920; as recommended in writing by metal panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

### 2.4 FABRICATION

- A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.
- C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- D. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- E. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

### 2.5 FINISHES

- A. Coating shall be Coil-Coated Fluorocarbon Resin utilizing 70% Kynar 500 resins. Color as selected by Architect from manufacturer's standard colors and follow the colors pattern described in Drawings.
- B. Number of Coats: 2-coat. Coating shall be factory applied on a continuous process paint line. Coating shall consist of a 0.2 mil prime coat, a 0.75 mil barrier coat, a 0.75 mil metallic/color coat containing 70% Kynar resins, and a 0.5 mil clear coat containing 70% Kynar resins
- C. Relevant to the color selected, material to be painted in accordance with either AAMA specification 2605 or 2604.
- D. Provide factory applied strippable plastic film for protection during fabrication and installation

PART 3 - EXECUTION

3.1 PREPARATION

- A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.

3.2 METAL PANEL INSTALLATION

- A. Lap-Seam Metal Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.
  - 1. Lap ribbed or fluted sheets one full rib. Apply panels and associated items true to line for neat and weathertight enclosure.
  - 2. Provide metal-backed washers under heads of exposed fasteners bearing on weather side of metal panels.
  - 3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
  - 4. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.
  - 5. Flash and seal panels with weather closures at perimeter of all openings.
- B. Watertight Installation:
  - 1. Apply a continuous ribbon of sealant or tape to seal lapped joints of metal panels, using sealant or tape as recommend by manufacturer on side laps of nesting-type panels; and elsewhere as needed to make panels watertight.
  - 2. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
  - 3. At panel splices, nest panels with minimum 6-inch (152-mm) end lap, sealed with sealant and fastened together by interlocking clamping plates.
- C. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
- D. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.

3.3 CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On

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completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

END OF SECTION 074213.13

SECTION 075423 - THERMOPLASTIC POLYOLEFIN (TPO) ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Adhered thermoplastic polyolefin (TPO) roofing system.
2. Roof insulation.
3. Cover board
4. Walk Pads
5. Vapor barrier

1.2 DEFINITIONS

- A. Roofing Terminology: Definitions in ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Roofing Conference: Conduct conference at **Project site**.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.
- C. Samples for Verification: For the following products:
1. Sheet roofing, of color required.
  2. Aggregate surfacing material in gradation **and color** required.
  3. Walkway pads or rolls, of color required.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For roofing system to include in maintenance manuals.

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### 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

### 1.7 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.
  - 1. Warranty: Firestone 20 year Red Shield Limited Warranty covering membrane, roof insulation, and membrane accessories.
    - a. Limit of Liability: No dollar limitation.
    - b. Scope of Coverage: Repair leaks in the roofing system caused by:
      - 1) Ordinary wear and tear of the elements.
      - 2) Manufacturing defect in Firestone brand materials.
      - 3) Defective workmanship used to install these materials.
      - 4) Damage due to winds up to 55 mph (88 km/h)
      - 5) Hail up to 2" diameter
    - c. Not Covered:
      - 1) Damage due to winds in excess of 55 mph (88 km/h)
      - 2) Damage due to hurricanes or tornadoes
      - 3) Intentional damage.
      - 4) Unintentional damage due to normal rooftop inspections, maintenance, or service.

## PART 2 - PRODUCTS

### 2.1 MANUFA

- A. Acceptable Manufacturer - Roofing System: Firestone Building Products Co., Carmel, IN. [www.firestonebpc.com](http://www.firestonebpc.com), as represented by Upland Corporation, 404 Towner Ave NE Albuquerque NM 87106 (505) 266-3800
  - 1. Roofing systems manufactured by others are acceptable provided the roofing system is completely equivalent in materials and warranty conditions and the manufacturer meets the following qualifications:
    - a. Specializing in manufacturing the roofing system to be provided.
    - b. Minimum ten years of experience manufacturing the roofing system to be provided
    - c. Able to provide a no dollar limit, single source roof system warranty that is backed by corporate assets in excess of one billion dollars.
    - d. ISO 9002 certified.
    - e. Able to provide isocyanurate insulation that is produced in own facilities.

### 2.2 ROOFING DESCRIPTION

- A Roofing System:

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1. Membrane: Thermoplastic Polyolefin (TPO).
  2. Thickness: As specified elsewhere.
  3. Membrane Attachment: Fully adhered.
  4. Comply with applicable local building code requirements.
  5. Provide assembly having Underwriters Laboratories, Inc. (UL) **Class A, B or C** Fire Hazard Classification.
  6. provide assembly complying with Factory Mutual Corporation (FM) Roof Assembly Classification, FM DS 1-28 and 1-29, and meeting minimum requirements of FM 1-90 wind uplift rating
- B. Insulation:
1. Total system R value, including high-density Polyisocyanurate cover board : R=20 minimum.
  2. Maximum Profile Thickness: 3.6 inches.
  3. Maximum Individual Board Thickness: 1.8 inches; 2 layers at R= 10.2 each; stagger joints in adjacent layers.
  4. Base Layer: Polyisocyanurate foam board, non-composite.
    - a. Attachment: Mechanical Fastening.
  5. Intermediate/Top Layer(s): Polyisocyanurate foam board, non-composite.
    - a. Attachment: Mechanical Fastening.
- C. Insulation Cover Board: Gypsum based cover board.
1. Thickness: 0.5 inch (12.7mm).
  2. Attachment: Mechanical fastening.
- D. Vapor Barrier over deck/deck cover:
1. Membrane: High density polyethylene sheet with SBS modified bitumen adhesive.
  2. Attachment: Self adhering.
- E. Crickets and Saddles: Tapered insulation of same type as specified for top layer; slope as indicated.

### 2.3 TPO MEMBRANE MATERIALS

- A. Membrane: Flexible, heat weldable sheet composed of thermoplastic polyolefin polymer and ethylene propylene rubber; complying with ASTM D 6878, with polyester weft inserted reinforcement and the following additional characteristics:
1. Thickness: 0.060 inch (1.52 mm) plus/minus 10 percent, with coating thickness over reinforcement of 0.024 inch (0.61 mm) plus/minus 10 percent.
  2. Sheet Width: Provide the widest available sheets to minimize field seaming.
  3. Puncture Resistance: 265 lbf (1174 N), minimum, when tested in accordance FTM 101C Method 2031.
  4. Solar Reflectance: 0.79, minimum, when tested in accordance with ASTM C 1549.
  5. Color: White.
  6. Acceptable Product: ULTRAPLY TPO by Firestone
- B. Membrane Fasteners: Type and size as required by roof membrane manufacturer for roofing system and warranty to be provided; use only fasteners furnished by roof membrane manufacturer.
- C. Curb and Parapet Flashing: Same material as membrane, with encapsulated edge which eliminates need for seam sealing the flashing-to-roof splice; precut to 457 mm (18 inches) wide.
- D. Formable Flashing: Non-reinforced, flexible, heat weldable sheet, composed of thermoplastic polyolefin polymer and ethylene propylene rubber.
1. Thickness: 0.060 inch (1.52 mm) plus/minus 10 percent.
  2. Tensile Strength: 1550 psi (10.7 MPa), minimum, when tested in accordance with ASTM D

- 638 after heat aging.
  3. Elongation at Break: 650 percent, minimum, when tested in accordance with ASTM D 638 after heat aging.
  4. Tearing Strength: 12 lbf (53 N), minimum, when tested in accordance with ASTM D 1004 after heat aging.
  5. Color: White.
  6. Acceptable Product: ULTRAPLY TPO Flashing by Firestone.
- E. Tape Flashing: 5-1/2 inch (140 mm) nominal wide TPO membrane laminated to cured rubber polymer seaming tape, overall thickness 0.065 inch (1.6 mm) nominal; TPO QuickSeam Flashing by Firestone.
- F. Bonding Adhesive: Neoprene and SBR rubber blend, formulated for compatibility with the membrane other substrate materials, including masonry, wood, and insulation facings; ULTRAPLY Bonding Adhesive by Firestone.
- G. Pourable Sealer: Two-part polyurethane, two-color for reliable mixing; Pourable Sealer by Firestone.
- H. Seam Plates: Steel with barbs and Galvalume coating; corrosion-resistance complying with FM 4470.
- I. Termination Bars: Aluminum bars with integral caulk ledge; 1.3 inches (33 mm) wide by 0.10 inch (2.5 mm) thick; Firestone Termination Bar by Firestone.
- J. Cut Edge Sealant: Synthetic rubber-based, for use where membrane reinforcement is exposed; UltraPly TPO Cut Edge Sealant by Firestone.
- K. General Purpose Sealant: EPDM-based, one part, white general purpose sealant; UltraPly TPO General Purpose Sealant by Firestone.
- L. Molded Flashing Accessories: Unreinforced TPO membrane pre-molded to suit a variety of flashing details, including pipe boots, inside corners, outside corners, etc.; UltraPly TPO Small and Large Pipe Flashing by Firestone.
- M. Roof Walkway Pads: Non-reinforced TPO walkway pads, 0.130 inch (3 mm) by 30 inches (760 mm) by 40 feet (12.19 m) long with patterned traffic bearing surface; UltraPly TPO Walkway Pads by Firestone.
- N. Yellow Safety Strip: To designate areas of caution on the roof or around rooftop objects. 5.5 inches wide (140 mm) by 100 feet long (30 m) strip and nominal 30 mil (0.76 mm) thick yellow TPO membrane laminated to a white, cured, seam tape. Compatible with TPO and EPDM; QuickSeam Yellow Safety Strip by Firestone.

## 2.4 ROOF INSULATION AND COVER BOARDS

- A. Polyisocyanurate Board Insulation: Closed cell polyisocyanurate foam with black glass reinforced mat laminated to faces, complying with ASTM C 1289 Type II Class 1, with the following additional characteristics:
1. Thickness: 2 Layers at 1 3/4" thickness. (3 1/2" Total thickness)
  2. Size: 48 inches (1220 mm) by 96 inches (2440 mm), nominal.
    - a. Exception: Insulation to be attached using adhesive or asphalt may be no larger than 48 inches (1220 mm) by 48 inches (1220 mm), nominal.
  3. R-Value (LTTR):
    - a. R-20 minimum.
  4. Compressive Strength: 20 psi (138 kPa) when tested in accordance with ASTM C 1289.
  5. Ozone Depletion Potential: Zero; made without CFC or HCFC blowing agents.
  6. Recycled Content: 19 percent post-consumer and 15 percent post-industrial, average.
  7. Acceptable Product: Flat and/or Tapered ISO 95+ polyiso board insulation by Firestone.
- B. Gypsum-Based Cover Board: Non-combustible, water resistant gypsum core with embedded



glass mat facers, complying with ASTM C 1177/C 1177M, and with the following additional characteristics:

1. Size: 48 inches (1220 mm) by 96 inches (2440 mm), nominal.
    - a. Exception: Board to be attached using adhesive or asphalt may be no larger than 48 inches (1220 mm) by 48 inches (1220 mm), nominal.
  2. Thickness: 0.5 inch.
  3. Surface Water Absorption: 2.5 g, maximum, when tested in accordance with ASTM C 473.
  4. Surface Burning Characteristics: Flame spread of 0, smoke developed of 0, when tested in accordance with ASTM E 84.
  5. Combustibility: Non-combustible, when tested in accordance with ASTM E 136.
  6. Factory Mutual approved for use with FM 1-60 and 1-90 rated roofing assemblies.
  7. Mold Growth Resistance: Zero growth, when tested in accordance with ASTM D 3273 for minimum of 4 weeks.
  8. Acceptable Product: Securock by USG.
- B. Insulation Fasteners: Type and size as required by roof membrane manufacturer for roofing system and warranty to be provided; use only fasteners furnished by roof membrane manufacturer

## 2.5 VAPOR BARRIER

- A. Vapor Barrier Membrane: Comprised of SBS modified bitumen adhesive, factory-laminated to a tri-laminate woven, high-density polyethylene top surface. Release liner protecting adhesive.
1. Intended for use as a direct to deck air/vapor barrier in roofing systems and may be used as a temporary roof membrane for up to ninety (90) days.
  2. Thickness: 0.0325" (0.826 mm) minimum, when tested in accordance with ASTM D 5147.
  3. Max Load at Break at 73 °F (23 °C): 64 lbf/in, MD (11 kN/m) 88 lbf/in, XMD (15 kN/m) when tested in accordance with ASTM D 5147.
  4. Low Temperature Flexibility: -30 °F (-34 °C) when tested in accordance with ASTM D 5147.
  5. Moisture Vapor Permeance, 0.02 Perms (0.92 Ng/Pa•s•m<sup>2</sup>) maximum, when tested in accordance with ASTM E 96.
  6. Air Permeability: 0.00114 ft<sup>3</sup>/min•ft<sup>2</sup> (0.007 L/sec•m<sup>2</sup>) maximum, when tested in accordance with ASTM E 2178.
- B. Acceptable Product: V-Force Vapor Barrier Membrane by Firestone

## 2.6 METAL ACCESSORIES

- A. Metal Roof Edging and Fascia: Continuous metal edge member serving as termination of roof membrane and retainer for metal fascia; watertight with no exposed fasteners; mounted to roof edge nailer
1. Wind Performance
    - a. Membrane Pull-Off Resistance: 100 lbs/ft (1460 N/m), minimum, when tested in accordance with ANSI/SPRI ES-1 Test Method RE-1, current edition.
    - b. Fascia Pull-Off Resistance: At least the minimum required when tested in accordance with ANSI/SPRI ES-1 Test Method RE-2, current edition
    - c. Provide product listed in current Factory Mutual Research Corporation Approval Guide with at least FM 1-270 rating.
  2. Fascia Face Height: 5 inches (127 mm).
  3. Edge Member Height Above Nailer: 1-1/4 inches (31 mm).
  4. Fascia Material and Finish: 24 gage, 0.024 inch (0.06 mm) galvanized steel with Kynar 500 finish in manufacturer's standard color; matching concealed joint splice plates; factory-installed protective plastic film
  5. Length: 144 inches (3650 mm)

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6. Functional Characteristics: Fascia retainer supports while allowing for free thermal cycling of fascia
  7. Aluminum Bar: Continuous 6063-T6 alloy aluminum extrusion with pre-punched slotted holes; miters welded; injection molded EPDM splices to allow thermal expansion.
  8. Anchor Bar Cleat: 20 gage, 0.036 inch (0.9 mm) G90 coated commercial type galvanized steel with pre-punched holes.
  9. Curved Applications: Factory modified.
  10. Fasteners: Factory-provided corrosion resistant fasteners, with drivers; no exposed fasteners permitted.
  11. Special Shaped Components: Provide factory-fabricated pieces necessary for complete installation, including miters, scuppers, and end caps; minimum 14 inch (355 mm) long legs on corner pieces.
  12. Scuppers: Welded watertight.
  13. Accessories: Provide matching brick wall cap, downspout, extenders, and other special fabrications as shown on the drawings.
- B. Parapet Copings: Formed metal coping with galvanized steel anchor/support cleats for capping any parapet wall; watertight, maintenance free, without exposed fasteners; butt type joints with concealed splice plates; mechanically fastened as indicated; Firestone PTCF.
1. Wind Performance:
    - a. At least the minimum required when tested in accordance with ANSI/SPRI ES-1 Test Method RE-3, current edition.
    - b. Provide product listed in current Factory Mutual Research Corporation Approval Guide with at least FM 1-90 rating.
  2. Description: Coping sections allowed to expand and contract freely while locked in place on anchor cleats by mechanical pressure from hardened stainless steel springs factory attached to anchor cleats; 8 inch (200 mm) wide splice plates with factory applied dual non-curing sealant strips capable of providing watertight seal
  3. Material and Finish: 24 gage, 0.024 inch (0.06 mm) thick galvanized steel with Kynar 500 finish in manufacturer's standard color; matching concealed joint splice plates; factory-installed protective plastic film.
  4. Dimensions:
    - a. Wall Width: As indicated on the drawings.
    - b. Piece Length: Minimum 144 inches (3650 mm).
    - c. Curved Application: Factory fabricated in true radius
  5. Anchor/Support Cleats: 20 gage, 0.036 inch (0.9 mm) thick prepunched galvanized cleat with 12 inch (305 mm) wide stainless steel spring mechanically locked to cleat at 72 inches (1820 mm) on center.
  6. Special Shaped Components: Provide factory-fabricated pieces necessary for complete installation, including miters, corners, intersections, curves, pier caps, and end caps; minimum 14 inch (355 mm) long legs on corner, intersection, and end pieces.
  7. Fasteners: Factory-furnished; electrolytically compatible; minimum pull out resistance of 240 pounds (109 kg) for actual substrate used; no exposed fastener

## PART 3 - EXECUTION

### 3.1 ROOFING INSTALLATION, GENERAL

- A. Install roofing system according to roofing system manufacturer's written instructions.

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- B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.
- C. Install roofing and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition

### 3.2 INSULATION AND COVER BOARD INSTALLATION

- A. Install insulation in configuration and with attachment method(s) specified in PART 2, under Roofing System.
- B. Install insulation in a manner that will not compromise the vapor retarder integrity.
- C. Install only as much insulation as can be covered with the completed roofing system before the end of the day's work or before the onset of inclement weather.
- D. Lay roof insulation in courses parallel to roof edges.
- E. Neatly and tightly fit insulation to all penetrations, projections, and nailers, with gaps not greater than 1/4 inch (6 mm). Fill gaps greater than 1/4 inch (6 mm) with acceptable insulation. Do not leave the roofing membrane unsupported over a space greater than 1/4 inch (6 mm).
- F. Mechanical Fastening: Using specified fasteners and insulation plates engage fasteners through insulation into deck to depth and in pattern required by Factory Mutual for FM Class specified in PART 2 and membrane manufacturer, whichever is more stringent.
- G. Adhesive Attachment: Apply in accordance with membrane manufacturer's instructions and recommendations; "walk-in" individual roof insulation boards to obtain maximum adhesive contact. Use only adhesives furnished by roof membrane manufacturer.

### 3.3 SINGLE PLY MEMBRANE INSTALLATION

- A. Beginning at low point of roof, place membrane without stretching over substrate and allow to relax at least 30 minutes before attachment or splicing; in colder weather allow for longer relax time
- B. Lay out the membrane pieces so that field and flashing splices are installed to shed water.
- C. Install membrane without wrinkles and without gaps or fishmouths in seams; bond and test seams and laps in accordance with membrane manufacturer's instructions and details.
- D. Install membrane adhered to the substrate, with edge securement as specified.
- E. Adhered Membrane: Bond membrane sheet to substrate using membrane manufacturer's recommended bonding material, application rate, and procedures.
- F. Edge Securement: Secure membrane at all locations where membrane terminates or goes through an angle change greater than 1:6 (2 in 12 inches) using mechanically fastened

reinforced perimeter fastening strips, plates, or metal edging as indicated or as recommended by roofing manufacturer.

1. Exceptions: Round pipe penetrations less than 18 inches (460 mm) in diameter and square penetrations less than 4 inches (200 mm) square.
2. Metal edging is not merely decorative; ensure anchorage of membrane as intended by roofing manufacturer

### 3.4 BASE FLASHING INSTALLATION

- A. Install flashings, including laps, splices, joints, bonding, adhesion, and attachment, as required by membrane manufacturer's recommendations and details.
- B. Metal Accessories: Install metal edgings, gravel stops, and copings in locations indicated on the drawings, with horizontal leg of edge member over membrane and flashing over metal onto membrane.
  1. Follow roofing manufacturer's instructions.
  2. Remove protective plastic surface film immediately before installation.
  3. Install water block sealant under the membrane anchorage leg.
  4. Flash with manufacturers recommended flashing sheet unless otherwise indicated.
  5. Where single application of flashing will not completely cover the metal flange, install additional piece of flashing to cover the metal edge.
  6. If the roof edge includes a gravel stop and sealant is not applied between the laps in the metal edging, install an additional piece of self-adhesive flashing membrane over the metal lap to the top of the gravel stop; apply seam edge treatment at the intersections of the two flashing sections.
  7. When the roof slope is greater than 1:12, apply seam edge treatment along the back edge of the flashing.
- C. Scuppers: Set in sealant and secure to structure, flashing as recommended by manufacturer.
- D. Roofing Expansion Joints: Install as shown on drawings and as recommended by roofing manufacturer.
- E. Flashing at Walls, Curbs, and Other Vertical and Sloped Surfaces: Install weathertight flashing at all walls, curbs, parapets, curbs, skylights, and other vertical and sloped surfaces that the roofing membrane abuts to; extend flashing at least 8 inches (200 mm) high above membrane surface.
  1. Use the longest practical flashing pieces.
  2. Evaluate the substrate and overlay and adjust installation procedure in accordance with membrane manufacturer's recommendations.
  3. Complete the splice between flashing and the main roof sheet with specified splice adhesive before adhering flashing to the vertical surface.
  4. Provide termination directly to the vertical substrate as shown on roof drawings.
- F. Roof Drains
  1. Taper insulation around drain to provide smooth transition from roof surface to drain. Use specified pre-manufactured tapered insulation with facer or suitable bonding surface to achieve slope; slope not to exceed manufacturer's recommendations.
  2. Position membrane, then cut a hole for roof drain to allow 1/2 to 3/4 inch (12 to 19 mm) of membrane to extend inside clamping ring past drain bolts.

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3. Make round holes in membrane to align with clamping bolts; do not cut membrane back to bolt holes.
  4. Apply sealant on top of drain bowl where clamping ring seats below the membrane.
  5. Install roof drain clamping ring and clamping bolts; tighten clamping bolts to achieve constant compression.
- G. Flashing at Penetrations: Flash all penetrations passing through the membrane; make flashing seals directly to the penetration.
1. Pipes, Round Supports, and Similar Items: Flash with specified pre-molded pipe flashings wherever practical; otherwise use specified self-curing elastomeric flashing
  2. Pipe Clusters and Unusual Shaped Penetrations: Provide penetration pocket at least 2 inches (50 mm) deep, with at least 1 inch (25 mm) clearance from penetration, sloped to shed water.
  3. Structural Steel Tubing: If corner radii are greater than 1/4 inch (6 mm) and longest side of tube does not exceed 12 inches (305 mm), flash as for pipes; otherwise, provide a standard curb with flashing.
  4. Flexible and Moving Penetrations: Provide weathertight gooseneck set in sealant and secured to deck, flashed as recommended by manufacturer.

### 3.5 WALKWAY INSTALLATION

- A. Install walkways at access points to the roof, around rooftop equipment that may require maintenance, and where indicated on the drawings.
- B. Walkway Pads: Adhere to the roofing membrane, spacing each pad at minimum of 1 inch (25 mm) and maximum of 3 inches (75 mm) from each other to allow for drainage.
1. If installation of walkway pads over field fabricated splices or within 6 inches (150 mm) of a splice edge cannot be avoided, adhere another layer of flashing over the splice and extending beyond the walkway pad a minimum of 6 inches (150 mm) on either side.
  2. Prime the membrane, remove the release paper on the pad, press in place, and walk on pad to ensure proper adhesion.
  3. Prime the membrane, remove the release paper on the pad, press in place, and walk on pad to ensure proper adhesion.
  4. Install Firestone Quick Seam Yellow Safety Strip where indicated on drawings for designating a safety perimeter around the roof edge, equipment, future solar PV, future solar hot water, and any other rooftop hazards. Comply with manufacturer's recommendations for installation for cleaning and priming surfaces to receive material.

### 3.6 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

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- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 075423

SECTION 076200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Formed low-slope roof sheet metal fabrications.
2. Formed wall sheet metal fabrications.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at **Project site**.

1.3 SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each exposed product and for each color and texture specified.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1. For copings and roof edge flashings that are SPRI ES-1 tested, shop shall be listed as able to fabricate required details as tested and approved.

1.5 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Finish Warranty Period: **20** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Sheet Metal Standard for Flashing and Trim: Comply with **SMACNA's "Architectural Sheet Metal Manual"** requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. Sheet Metal Standard for Copper: Comply with CDA's "Copper in Architecture Handbook." Conform to dimensions and profiles shown unless more stringent requirements are indicated.
- D. SPRI Wind Design Standard: Manufacture and install **copings** and **roof edge flashings** tested according to SPRI ES-1 and capable of resisting the following design pressure:
- E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
  - 1. Temperature Change: **120 deg F, ambient; 180 deg F, material surfaces.**

2.2 SHEET METALS

- A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
- B. Metallic-Coated Steel Sheet: Provide **zinc-coated (galvanized) steel sheet according to ASTM A 653/A 653M, G90 coating designation Class AZ50 coating designation, Grade 40**; prepainted by coil-coating process to comply with ASTM A 755/A 755M.
  - 1. Surface: Manufacturer's standard clear acrylic coating on both sides.
  - 2. Exposed Coil-Coated Finish:
    - a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  - 3. Color: To match fascia metal wall panel.

2.3 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal unless otherwise indicated.



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- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.
  - 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
    - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
    - b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
    - c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
  - 2. Fasteners for Copper Sheet: Copper, hardware bronze or passivated Series 300 stainless steel.
  - 3. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
  - 4. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
  - 5. Fasteners for **Zinc-Coated (Galvanized)** Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.
- C. Solder:
  - 1. For Copper: ASTM B 32, **Grade Sn50, 50 percent tin and 50 percent lead**] [**with maximum lead content of 0.2 percent**].
- D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape **1/2 inch** wide and **1/8 inch** thick.
- E. Elastomeric Sealant: ASTM C 920, elastomeric **silicone** polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- G. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.
- H. Bituminous Coating: Cold-applied asphalt emulsion according to ASTM D 1187.
- I. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

### 2.4 MANUFACTURED REGLETS

- A. Reglets: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated **with factory-**

**mitered and -welded corners and junctions and with interlocking counterflashing on exterior face, of same metal as reglet.**

1. Material: **Galvanized steel, 0.022 inch thick.**
2. Finish: [Mill] [With manufacturer's standard color coating] <Insert finish>.

## 2.5 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
  1. Obtain field measurements for accurate fit before shop fabrication.
  2. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
  3. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
- B. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.
  1. Form expansion joints of intermeshing hooked flanges, not less than **1 inch (25 mm)** deep, filled with butyl sealant concealed within joints.
  2. Use lapped expansion joints only where indicated on Drawings.
- C. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.
- D. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- E. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.
- F. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- G. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. **Rivet joints where necessary for strength.**
- H. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. **Rivet joints where necessary for strength.**
  - 1.

2.6 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Roof Edge Flashing Gravel Stop **and Fascia Cap**: Fabricate in minimum **96-inch-** long, but not exceeding **12-foot-**long sections. Furnish with **6-inch- (150-mm-)** wide, joint cover plates. **Shop fabricate interior and exterior corners.**

1. Fabricate from the Following Materials:
  - a. Galvanized Steel: **0.028 inch** thick.

- B. Copings: Fabricate in minimum **96-inch** long, but not exceeding **12-foot-** long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and interior leg. Miter corners, **fasten and seal** watertight. **Shop fabricate interior and exterior corners.**

1. Fabricate from the Following Materials:
  - a. Galvanized Steel: **0.040 inch** thick.

- C. Base Flashing: **Shop fabricate interior and exterior corners.** Fabricate from the following materials:

1. Galvanized Steel: **0.028 inch** thick.

- D. Counterflashing **and Flashing Receivers**: Fabricate from the following materials:

1. Galvanized Steel: [**0.022 inch (0.56 mm)**] **<Insert dimension>** thick.

- E. Roof-Penetration Flashing: Fabricate from the following materials:

1. Galvanized Steel: [**0.028 inch (0.71 mm)**] **<Insert dimension>** thick.

2.7 WALL SHEET METAL FABRICATIONS

- A. Retain "Opening Flashings in Frame Construction" Paragraph below for nonmasonry-clad wood or cold-formed steel-framed walls. Claddings may include exterior insulation and finish systems (EIFS), siding, wood shingles, or shakes. Flashing is usually required to surround wall-opening components such as windows, doors, and louvers.

1. Opening Flashings in Frame Construction: Fabricate head, sill, **jamb**, and similar flashings to extend **4 inches** beyond wall openings. Form head and sill flashing with **2-inch-** high, end dams. Fabricate from the following materials:
2. Galvanized Steel: [**0.022 inch (0.56 mm)**] **<Insert dimension>** thick.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
  2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
  3. Space cleats not more than **12 inches** apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
  4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
  5. Torch cutting of sheet metal flashing and trim is not permitted.
- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
1. Coat concealed side of [**uncoated-aluminum**] [**and**] [**stainless-steel**] sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
  2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of **10 feet** with no joints within **24 inches** of corner or intersection.
1. Form expansion joints of intermeshing hooked flanges, not less than **1 inch** deep, filled with sealant concealed within joints.
  2. Use lapped expansion joints only where indicated on Drawings.
- D. Fasteners: Use fastener sizes that penetrate **wood blocking or sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screw**
- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

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- F. Seal joints as required for watertight construction. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of **1-1/2 inches**; however, reduce pre-tinning where pre-tinned surface would show in completed Work.
  - 1. Do not solder **metallic-coated steel and aluminum** sheet.
  - 2. Do not use torches for soldering.
  - 3. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
  - 4. Stainless-Steel Soldering: Tin edges of uncoated sheets, using solder for stainless steel and acid flux. Promptly remove acid flux residue from metal after tinning and soldering. Comply with solder manufacturer's recommended methods for cleaning and neutralization.
  - 5. Copper Soldering: Tin edges of uncoated sheets, using solder for copper.
- H. Rivets: Rivet joints in uncoated aluminum where necessary for strength.

### 3.2 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal flashing and trim to comply with performance requirements[, **sheet metal manufacturer's written installation instructions,**] and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
- B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate.
- C. Copings: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated.
- D. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of **4 inches** over base flashing. Install stainless-steel draw band and tighten.
- E. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing **4 inches** over base flashing. Lap counterflashing joints minimum of **4 inches**.
- F. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with [**elastomeric**] [**butyl**] sealant and clamp flashing to pipes that penetrate roof.

### 3.3 WALL FLASHING INSTALLATION

- A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to cited sheet metal standard unless otherwise indicated. Coordinate installation of

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wall flashing with installation of wall-opening components such as windows, doors, and louvers.

- B. Reglets: Installation of reglets is specified in **Section 042000 "Unit Masonry."**
- C. Opening Flashings in Frame Construction: Install continuous head, sill, **jamb**, and similar flashings to extend **4 inches** beyond wall openings.

### 3.4 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.
- D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

END OF SECTION 076200

SECTION 077200 - ROOF ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Roof curbs.
  - 2. Roof hatches.

1.2 SUBMITTALS

- A. Product Data: For each type of roof accessory.
- B. Shop Drawings: For roof accessories.

1.3 WARRANTY

- A. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finishes or replace roof accessories that show evidence of deterioration of factory-applied finishes within **20** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 ROOF HATCH

- A. Roof Hatches: Metal roof-hatch units with lids and insulated **double**-walled curbs, welded or mechanically fastened and sealed corner joints, continuous lid-to-curb counterflashing and weathertight perimeter gasketing, **straight sides**, and integrally formed deck-mounting flange at perimeter bottom.
  - 1. Bilco Bil-Guard 2.0 Hatch Railing System
  - 2. Babcock-Davis: a Cierra Products Inc. Company
  - 3. Bilco Company
  - 4. Bristolite Skylights
  - 5. Custom Curb, Inc.
  - 6. Dur-Red Products.
  - 7. Hi Pro International. Inc.
  - 8. J.L. Industries, Inc.
  - 9. Metallic Products Corporation
  - 10. Milcor Inc.; a Gibraltar Company
  - 11. Nystrom, Inc.
  - 12. O'Keeffe's Inc.
  - 13. Precision Ladders, LLC.
  - 14. Roof Products & Systems Corporation.

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15. ThyCurb; Div of Tybar Corporation
  16. Wasco Products, Inc.
  17. Western Canwell
- B. Type and Size: Single-leaf lid, **30 by 36 inches**.
- C. Loads: Minimum **40-lbf/sq. ft.** external live load and **20-lbf/sq. ft.** internal uplift load.
1. Dome Glazing: Minimum **40-lbf/sq. ft.** external live load and **20-lbf/sq. ft.** internal uplift load.
- D. Hatch Material: **Zinc-coated (galvanized)** steel sheet.
1. Thickness: **Manufacturer's standard thickness for hatch size indicated.**
  2. Finish: **Baked enamel or powder coat.**
  3. Color: **As selected by Architect from manufacturer's full range.**
- E. Construction:
1. Insulation: **Polyisocyanurate board.**
    - a. R-Value: **12.0** according to ASTM C 1363.
  2. Nailer: Factory-installed wood nailer continuous around hatch perimeter.
  3. Hatch Lid: Opaque, insulated, and double walled, with manufacturer's standard metal liner of same material and finish as outer metal lid.
  4. Hatch Lid: Glazed, insulated, and double walled, with manufacturer's standard metal liner of same material and finish as outer metal lid.
  5. Curb Liner: Manufacturer's standard, of same material and finish as metal curb.
  6. On ribbed or fluted metal roofs, form flange at perimeter bottom to conform to roof profile.
  7. Fabricate curbs to minimum height of **12 inches** above roofing surface unless otherwise indicated.
  8. Sloping Roofs: Where slope or roof deck exceeds 1:48, fabricate curb with perimeter curb height that is **tapered to accommodate roof slope so that top surfaces of perimeter curb are level.** Equip hatch with water diverter or cricket on side that obstructs water flow.
- F. Hardware: Spring operators, hold-open arm, **galvanized**-steel spring latch with turn handles, **galvanized**-steel butt- or pintle-type hinge system, and padlock hasps inside and outside.
1. Provide two-point latch on lids larger than **84 inches**.
  2. Provide remote-control operation.
- G. Safety Railing System: Roof-hatch manufacturer's standard system including rails, clamps, fasteners, safety barrier at railing opening, and accessories required for a complete installation; attached to roof hatch and complying with 29 CFR 1910.23 requirements and authorities having jurisdiction.
1. Height: **42 inches** above finished roof deck.



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2. Posts and Rails: Galvanized-steel pipe, **1-1/4 inches** in diameter or galvanized-steel tube, **1-5/8 inches** in diameter.
3. Flat Bar: Galvanized steel, **2 inches** high by **3/8 inch** thick.
4. Maximum Opening Size: System constructed to prevent passage of a sphere **21 inches** in diameter.
5. Chain Passway Barrier: Galvanized proof coil chain with quick link on fixed end.
6. Self-Latching Gate: Fabricated of same materials and rail spacing as safety railing system. Provide manufacturer's standard hinges and self-latching mechanism.
7. Post and Rail Tops and Ends: Weather resistant, closed or plugged with prefabricated end fittings.
8. Provide weep holes or another means to drain entrapped water in hollow sections of handrail and railing members.
9. Fabricate joints exposed to weather to be watertight.
10. Fasteners: Manufacturer's standard, finished to match railing system.
11. Finish: **Manufacturer's standard**
  - a. Color: **As selected by Architect from manufacturer's full range.**

H. Ladder-Assist Post: Roof-hatch manufacturer's standard device for attachment to roof-access ladder.

1. Operation: Post locks in place on full extension; release mechanism returns post to closed position.
2. Height: **42 inches** above finished roof deck.
3. Material: **Steel tube**.
4. Post: diameter pipe.
5. Finish: **Manufacturer's standard baked enamel or powder coat.**
  - a. Color: **As selected by Architect from manufacturer's full range.**

## 2.2 METAL MATERIALS

A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, **G90** coating designation[ **and mill phosphatized for field painting where indicated**].

1. Mill-Phosphatized Finish: Manufacturer's standard for field painting.
2. Factory Prime Coating: Where field painting is indicated, apply pretreatment and white or light-colored, factory-applied, baked-on epoxy primer coat, with a minimum dry film thickness of **0.2 mil** .
3. Exposed Coil-Coated Finish: Prepainted by the coil-coating process to comply with ASTM A 755/A 755M. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  - a. Two-Coat Fluoropolymer Finish: AAMA 621. System consisting of primer and fluoropolymer color topcoat containing not less than 70 percent PVDF resin by weight.
4. Baked-Enamel or Powder-Coat Finish: After cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat to a minimum dry film thickness of **2 mils** .

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5. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester-backer finish consisting of prime coat and wash coat, with a minimum total dry film thickness of **0.5 mil**.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. General: Verify dimensions of roof openings for roof accessories. Install roof accessories according to manufacturer's written instructions.
  1. Install roof accessories level; plumb; true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
  2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
  3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
  4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.
- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
  1. Coat concealed side of **uncoated aluminum** or **stainless-steel** roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
  2. Underlayment: Where installing roof accessories directly on cementitious or wood substrates, install a course of underlayment and cover with manufacturer's recommended slip sheet.
- C. Security Grilles: Weld bar intersections and, **using tamper-resistant bolts, attach the** ends of bars to structural frame or primary curb walls.
- D. Seal joints with **elastomeric or butyl** sealant as required by roof accessory manufacturer.

#### 3.2 REPAIR AND CLEANING

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing according to ASTM A 780/A 780M.
- B. Touch up factory-primed surfaces with compatible primer ready for field painting according to Section 099113 "Exterior Painting."
- C. Clean exposed surfaces according to manufacturer's written instructions.
- D. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

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END OF SECTION 077200

SECTION 078413 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Penetrations in fire-resistance-rated walls.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at **Project site**.

1.3 SUBMITTALS

- A. Product Data: For each type of product.

- B. Product Schedule: For each penetration firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing and inspecting agency.

1. Engineering Judgments: Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping system, submit illustration, with modifications marked, approved by penetration firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly. Obtain approval of authorities having jurisdiction prior to submittal.

- C. Product test reports.

- D. Installer Certificates: From Installer indicating that penetration firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:

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1. Perform penetration firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
2. Test per testing standards referenced in "Penetration Firestopping Systems" Article. Provide rated systems complying with the following requirements:
  - a. Penetration firestopping systems shall bear classification marking of a qualified testing agency.
    - 1) UL in its "Fire Resistance Directory."
    - 2) Intertek Group in its "Directory of Listed Building Products."
    - 3) FM Global in its "Building Materials Approval Guide."

### 2.2 PENETRATION FIRESTOPPING SYSTEMS

- A. Penetration Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
  1. A/D Fire Protection System Inc.
  2. Grace, W.R. & Co. – Conn.
  3. Hilti, Inc.
  4. Johns Manville
  5. Nelson Firestop Products.
  6. NUCO Inc.
  7. RectorSeal Corporation
  8. Specified Technologies Inc.
  9. 3M; Fire Protection Products Division
  10. Tremco; Sealant/ Weatherproofing Division
  11. USG Corporation.
- B. Penetrations in Fire-Resistance-Rated Walls: Penetration firestopping systems with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of **0.01-inch wg**
  1. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
- C. Penetrations in Horizontal Assemblies: Penetration firestopping systems with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of **0.01-inch wg**.
  1. F-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated.
  2. T-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
  3. W-Rating: Provide penetration firestopping systems showing no evidence of water leakage when tested according to UL 1479.

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- D. Penetrations in Smoke Barriers: Penetration firestopping systems with ratings determined per UL 1479, based on testing at a positive pressure differential of **0.30-inch wg** .
  - 1. L-Rating: Not exceeding **5.0 cfm/sq. ft.** of penetration opening at and no more than **50-cfm** cumulative total for any **100 sq. ft. (9.3 sq. m)** at both ambient and elevated temperatures.
- E. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E 84.
- F. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping system manufacturer and approved by qualified testing and inspecting agency for conditions indicated.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. General: Install penetration firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications.
- C. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings.
  - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not forming permanent components of firestopping.
- D. Install fill materials by proven techniques to produce the following results:
  - 1. Fill voids and cavities formed by openings, forming materials, accessories and penetrating items to achieve required fire-resistance ratings.
  - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
  - 3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

#### 3.2 IDENTIFICATION

- A. Wall Identification: Permanently label walls containing penetration firestopping systems with the words "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS," using lettering not less than **3 inches** high and with minimum **0.375-inch** strokes.

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1. Locate in accessible concealed floor, floor-ceiling, or attic space at 15 feet from end of wall and at intervals not exceeding 30 feet .
- B. Penetration Identification: Identify each penetration firestopping system with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of penetration firestopping system edge so labels are visible to anyone seeking to remove penetrating items or firestopping systems. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
  1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
  2. Contractor's name, address, and phone number.
  3. Designation of applicable testing and inspecting agency.
  4. Date of installation.
  5. Manufacturer's name.
  6. Installer's name.

### 3.3 FIELD QUALITY CONTROL

- A. Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E 2174.
- B. Where deficiencies are found or penetration firestopping system is damaged or removed because of testing, repair or replace penetration firestopping system to comply with requirements.
- C. Proceed with enclosing penetration firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

END OF SECTION 078413

SECTION 078443 - JOINT FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Joints in or between fire-resistance-rated constructions.
2. Joints at exterior curtain-wall/floor intersections.
3. Joints in smoke barriers.

1.2 PREINSTALLATION MEETINGS

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

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- B. Product Schedule: For each joint firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing agency.

1. Engineering Judgments: Where Project conditions require modification to a qualified testing agency's illustration for a particular joint firestopping system condition, submit illustration, with modifications marked, approved by joint firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with UL's "Qualified Firestop Contractor Program Requirements."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:

1. Perform joint firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.



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2. Test per testing standards referenced in "Joint Firestopping Systems" Article. Provide rated systems complying with the following requirements:
  - a. Joint firestopping systems shall bear classification marking of a qualified testing agency.
    - 1) UL in its "Fire Resistance Directory."
    - 2) Intertek Group in its "Directory of Listed Building Products."

### 2.2 JOINT FIRESTOPPING SYSTEMS

- A. Joint Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which joint firestopping systems are installed. Joint firestopping systems shall accommodate building movements without impairing their ability to resist the passage of fire and hot gases.
- B. Joints in or between Fire-Resistance-Rated Construction: Provide joint firestopping systems with ratings determined per ASTM E 1966 or UL 2079.
  1. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of the wall, floor, or roof in or between which it is installed.
- C. Joints at Exterior Curtain-Wall/Floor Intersections: Provide joint firestopping systems with rating determined per ASTM E 2307.
  1. F-Rating: Equal to or exceeding the fire-resistance rating of the floor assembly.
- D. Joints in Smoke Barriers: Provide fire-resistive joint systems with ratings determined per UL 2079 based on testing at a positive pressure differential of **0.30-inch wg**.
  1. L-Rating: Not exceeding **5.0 cfm/ft.** of joint at both ambient and elevated temperatures.
- E. Exposed Joint Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
- F. Accessories: Provide components of fire-resistive joint systems, including primers and forming materials, that are needed to install elastomeric fill materials and to maintain ratings required. Use only components specified by joint firestopping system manufacturer and approved by the qualified testing agency for conditions indicated.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of the Work.

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- B. General: Install fire-resistive joint systems to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.
- C. Install forming materials and other accessories of types required to support elastomeric fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
  - 1. After installing elastomeric fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of fire-resistive joint system.
- D. Install elastomeric fill materials for fire-resistive joint systems by proven techniques to produce the following results:
  - 1. Elastomeric fill voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
  - 2. Apply elastomeric fill materials so they contact and adhere to substrates formed by joints.
  - 3. For elastomeric fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

### 3.2 IDENTIFICATION

- A. Joint Identification: Identify joint firestopping systems with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within **6 inches** of joint edge so labels are visible to anyone seeking to remove or joint firestopping system. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
  - 1. The words "Warning - Joint Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
  - 2. Contractor's name, address, and phone number.
  - 3. Designation of applicable testing agency.
  - 4. Date of installation.
  - 5. Manufacturer's name.
  - 6. Installer's name.

### 3.3 FIELD QUALITY CONTROL

- A. Inspecting Agency: Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E 2393.
- B. Where deficiencies are found or joint firestopping systems are damaged or removed due to testing, repair or replace joint firestopping systems so they comply with requirements.
- C. Proceed with enclosing joint firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

END OF SECTION 078443

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Silicone joint sealants.
  2. Urethane joint sealants.
  3. Mildew-resistant joint sealants.
  4. Latex joint sealants.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at [**Project site**] <**Insert location**>.

1.3 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product.
- B. Samples: For each kind and color of joint sealant required.
- C. Joint-Sealant Schedule: Include the following information:
1. Joint-sealant application, joint location, and designation.
  2. Joint-sealant manufacturer and product name.
  3. Joint-sealant formulation.
  4. Joint-sealant color.

1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

1.5 PRECONSTRUCTION TESTING

- A. Preconstruction Laboratory Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
1. Adhesion Testing: Use ASTM C 794 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
  2. Compatibility Testing: Use ASTM C 1087 to determine sealant compatibility when in contact with glazing and gasket materials.

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3. Stain Testing: Use ASTM C 1248 to determine stain potential of sealant when in contact with **stone** or **masonry** substrates.
- B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates. Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
- 1.6 WARRANTY
- A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period: Two years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 JOINT SEALANTS, GENERAL

- A. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

### 2.2 SILICONE JOINT SEALANTS ASTM C 920

- A. Silicone, S, NS, 100/50, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
- a. Dow Corning Corporation; 790.
  - b. Pecora Corporation; 890.
  - c. Tremco Incorporated; Spectrum 1

### 2.3 URETHANE JOINT SEALANTS

- A. Urethane, S, NS, 25, NT: Single-component, nonsag, nontraffic-use, plus 25 percent and minus 25 percent movement capability, urethane joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.
- a. Pecora Corporation; Dynatrol II.
  - b. Polymeric Systems, Inc; PSI-270.
  - c. Tremco Incorporated; Dymeric 240.

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- B. Urethane, S, NS, 100/50, T, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Uses T and NT.
  - a. Pecora Corporation; Dynatrol II.
  - b. Polymeric Systems, Inc; PSI-270.
  - c. Tremco Incorporated; Dymeric 240.
  
- C. Urethane, S, NS, 25, T, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Uses T and NT.
  - a. Pecora Corporation; Dynatrol II.
  - b. Polymeric Systems, Inc; PSI-270.
  - c. Tremco Incorporated; Dymeric 240.
  
- D. Urethane, M, NS, 50, NT: Multicomponent, nonsag, plus 50 percent and minus 50 percent movement capability nontraffic-use, urethane joint sealant; ASTM C 920, Type M, Grade NS, Class 50, Use NT.
  - a. Polymeric Systems, Inc; PSI-270.
  - b. Tremco Incorporated; Dymeric 240 FC.
  
- E. Urethane, M, NS, 50, T, NT: Multicomponent, nonsag, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type M, Grade NS, Class 50, Uses T and NT.
  - a. Polymeric Systems, Inc; PSI-270.
  - b. Tremco Incorporated; Dymeric 240 FC.

### 2.4 MILDEW-RESISTANT JOINT SEALANTS

- A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.
  
- B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.
  - 1.
  
- C. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
  - a. BASF Building Systems; Sonolac.
  - b. Bostik, Inc; Chem-Calk 600.
  - c. May National Associates, Inc; Bondaflex 600.
  - d. Pecora Corporation; AC-20+.
  - e. Schnee-Morehead, Inc; SM 8200.

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2. Tremco Incorporated; Tremflex 834

### 2.5 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Joint Sealant: Manufacturer's standard non-sag, paintable, non-staining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90
  1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Pecora Corporation; AC-20 FTR.
    - b. USG Corporation; SHEETROCK Acoustical Sealant.

### 2.6 JOINT-SEALANT BACKING

- A. Cylindrical Sealant Backings: ASTM C 1330, **Type C closed-cell material with a surface skin Type O (open-cell material, Type B (bicellular material with a surface skin)) [ or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated]**, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

### 2.7 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
  1. Remove laitance and form-release agents from concrete.

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2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

### 3.2 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with ASTM C 1193 and joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
- C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  1. Place sealants so they directly contact and fully wet joint substrates.
  2. Completely fill recesses in each joint configuration.
  3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  1. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.

### 3.3 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
  1. Extent of Testing: Test completed and cured sealant joints as follows:
    - a. Perform **10** tests for the first **1000 feet** of joint length for each kind of sealant and joint substrate.
    - b. Perform one test for each **1000 feet** of joint length thereafter or one test per each floor per elevation.
  2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

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- B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

### 3.4 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.
1. Joint Locations:
    - a. Control and expansion joints in brick pavers.
    - b. Isolation and contraction joints in cast-in-place concrete slabs.
    - c. Joints between plant-precast architectural concrete paving units.
    - d. Joints in stone paving units[, **including steps**.
    - e. Tile control and expansion joints.
    - f. Joints between different materials listed above.
    - g. Other joints as indicated on Drawings.
  2. Joint Sealant: **Urethane, M, P, 50, T, NT**.
  3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
1. Joint Locations:
    - a. Construction joints in cast-in-place concrete.
    - b. Joints between plant-precast architectural concrete units.
    - c. Control and expansion joints in unit masonry.
    - d. Joints in dimension stone cladding.
    - e. Other joints as indicated on Drawings.
  2. Joint Sealant: **Silicone, nonstaining, S, NS, 50, NT**.
  3. Joint-Sealant Color: **As selected by Architect from manufacturer's full range of colors**.
- C. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.
1. Joint Locations:
    - a. Isolation joints in cast-in-place concrete slabs.
    - b. Control and expansion joints in stone flooring.
    - c. Control and expansion joints in brick flooring.
    - d. Control and expansion joints in tile flooring.
    - e. Other joints as indicated on Drawings.
  2. Joint Sealant: **Urethane, S, P, 25, T, NT**.
  3. Joint Sealant: Silicone



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4. Joint-Sealant Color: **As selected by Architect from manufacturer's full range of colors.**
- D. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.
1. Joint Locations:
    - a. Control and expansion joints on exposed interior surfaces of exterior walls.
    - b. Tile control and expansion joints.
    - c. Vertical joints on exposed surfaces of **unit masonry, concrete, walls and partitions.**
    - d. Joints on underside of plant-precast structural concrete **beams and planks.**
    - e. Other joints as indicated on Drawings.
  2. Joint Sealant: **Latex**
  3. Joint-Sealant Color: **As selected by Architect from manufacturer's full range of colors.**
- E. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement.
1. Joint Locations:
    - a. Control joints on exposed interior surfaces of exterior walls.
    - b. Perimeter joints between interior wall surfaces and frames of **interior doors windows and elevator entrances.**
    - c. Other joints as indicated on Drawings.
  2. Joint Sealant: **Acrylic latex.**
  3. Joint-Sealant Color: **As selected by Architect from manufacturer's full range of colors.**
- F. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.
1. Joint Locations:
    - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
    - b. Tile control and expansion joints where indicated.
    - c. **<Insert other joints>.**
    - d. Other joints as indicated on Drawings.
  2. Joint Sealant: **Silicone, mildew resistant, acid curing, S, NS, 25, NT.**
  3. Joint-Sealant Color: **As selected by Architect from manufacturer's full range of colors.**
- G. Joint-Sealant Application: Concealed mastics.
1. Joint Locations:
    - a. Aluminum thresholds.

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- b. Sill plates.
  - c. Other joints as indicated on Drawings.
2. Joint Sealant: **Butyl-rubber based.**
  3. Joint-Sealant Color: **As selected by Architect from manufacturer's full range of colors.**

END OF SECTION 079200

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes hollow-metal work.

1.2 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.3 SUBMITTALS

- A. Product Data: For each type of product.
- B. Sustainable Design Submittals:  $\geq$
- C. Shop Drawings: Include elevations, door edge details, frame profiles, metal thicknesses, preparations for hardware, and other details.
- D. Samples for Initial Selection: For units with factory-applied color finishes.
- E. Samples for Verification: For each type of exposed finish required.
- F. Schedule: Prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings.

1.4 QUALITY ASSURANCE

- A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
- B. Smoke-Control Door Assemblies: Comply with NFPA 105 or UL 1784.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

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1. Amweld Building Products, LLC.
2. Benchmark; a division of Therma-Tru Corporation.
3. Ceco Door Products; an Assa Abloy Group company.
4. Commercial Door and Hardware, Inc.
5. Curries Company; an Assa Abloy Group company.
6. Deansteel Manufacturing Company, Inc.
7. Firedoor Corporation.
8. Fleming Door Products Ltd.; an Assa Abloy Group company.
9. Habersham Metal Products Company.
10. Kewanee Corporation (The).
11. Mesker Door Inc.
12. Pioneer Industries, Inc.
13. Rocky Mountain Metals, Inc.
14. Security Metal Products Corp.
15. Southwestern Hollow Metal.
16. Steelcraft; an Ingersoll-Rand company.
17. Windsor Republic Doors.

### 2.2 REGULATORY REQUIREMENTS

- A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
  1. Smoke- and Draft-Control Assemblies: Provide an assembly with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.
- B. Fire-Rated, Borrowed-Lite Assemblies: Complying with NFPA 80 and listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.

### 2.3 INTERIOR DOORS AND FRAMES

- A. Heavy-Duty Doors and Frames: SDI A250.8, Level 2. At locations indicated in the Door and Frame Schedule.
  1. Physical Performance: Level B according to SDI A250.4.
  2. Doors: At locations indicated on the Door and Frame Schedule
    - a. Type: As indicated in the Door and Frame Schedule.
    - b. Thickness: 1-3/4 inches (44.5 mm).
    - c. Face: Metallic-coated, cold-rolled steel sheet, minimum thickness of 0.042 inch.
    - d. Edge Construction: Model 1 Full Flush.
    - e. Core: **Polyisocyanurate**
  3. Frames:

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- a. Materials: Metallic-coated, steel sheet, minimum thickness of 0.053 inch.
  - b. Sidelite and Transom Frames: Fabricated from same thickness material as adjacent door frame.
  - c. Construction: Knocked down.
4. Exposed Finish: Prime.

### 2.4 EXTERIOR HOLLOW-METAL DOORS AND FRAMES

- A. Extra-Heavy-Duty Doors and Frames: SDI A250.8, Level 3. At locations indicated in the Door and Frame Schedule.
1. Physical Performance: Level A according to SDI A250.4.
  2. Doors:
    - a. Type: As indicated in the Door and Frame Schedule.
    - b. Thickness: 1-3/4 inches .
    - c. Face: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A40 coating.
    - d. Edge Construction: Model 1, Full Flush
    - e. Core: Polyisocyanurate.
  3. Thermal-Rated Doors: Provide doors fabricated with thermal-resistance value (R-value) of not less than 2.1 deg F x h x sq. ft./Btu when tested according to ASTM C 1363.
  4. Frames:
    - a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A40 coating.
    - b. Construction: Knocked down.
  5. Exposed Finish: Prime.

### 2.5 BORROWED LITES

- A. Hollow-metal frames of metallic-coated steel sheet, minimum thickness of 0.053 inch.
- B. Construction: Knocked down.

### 2.6 FRAME ANCHORS

- A. Jamb Anchors:
1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
  2. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.

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- B. Floor Anchors: Formed from same material as frames, minimum thickness of **0.042 inch**, and as follows:
  - 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

### 2.7 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.
- D. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), **04Z** coating designation; mill phosphatized.
  - 1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.
- E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- F. Power-Actuated Fasteners in Concrete: From corrosion-resistant materials.
- G. Grout: ASTM C 476, except with a maximum slump of **4 inches**, as measured according to ASTM C 143/C 143M.
- H. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing).
- I. Glazing: Section 088000 "Glazing."
- J. Bituminous Coating: Cold-applied asphalt mastic, compounded for **15-mil (0.4-mm)** dry film thickness per coat.

### 2.8 FABRICATION

- A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Hollow-Metal Doors:
  - 1. Exterior Doors: Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
  - 2. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated.

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- C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
1. Sidelite and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
  2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
  3. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
  4. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
  5. Jamb Anchors: Provide number and spacing of anchors as follows:
    - a. Masonry Type: Locate anchors not more than **16 inches** from top and bottom of frame. Space anchors not more than **32 inches** o.c., to match coursing, and as follows:
      - 1) Two anchors per jamb up to **60 inches** high.
      - 2) Three anchors per jamb from **60 to 90 inches** high.
    - b. Stud-Wall Type: Locate anchors not more than **18 inches** from top and bottom of frame. Space anchors not more than **32 inches** o.c. and as follows:
      - 1) Three anchors per jamb up to **60 inches (1524 mm)** high.
      - 2) Four anchors per jamb from **60 to 90 inches (1524 to 2286 mm)** high.
      - 3) Two anchors per head for frames more than 42 inches wide.
    - c. Compression Type: Not less than two anchors in each frame.
  6. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers.
    - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
    - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- D. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
  2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.
- E. Stops and Moldings: Provide stops and moldings around glazed lites and louvers where indicated. Form corners of stops and moldings with mitered hairline joints.
1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow-metal work.

## LOVINGTON FIRE STATION # 2

2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
4. Provide loose stops and moldings on inside of hollow-metal work.
5. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

### 2.9 STEEL FINISHES

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

1. Shop Primer: SDI A250.10.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Hollow-Metal Frames: Install hollow-metal frames for doors, transoms, sidelites, borrowed lites, and other openings, of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.
1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
    - a. At fire-rated openings, install frames according to NFPA 80.
    - b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
    - c. Install frames with removable stops located on secure side of opening.
    - d. Install door silencers in frames before grouting.
    - e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
    - f. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
    - g. Field apply bituminous coating to backs of frames that will be filled with grout containing antifreezing agents.
  2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.
    - a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
  3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation inside frames.
  4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.



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5. Concrete Walls: Solidly fill space between frames and concrete with mineral-fiber insulation.
6. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
7. In-Place Metal or Wood-Stud Partitions: Secure slip-on drywall frames in place according to manufacturer's written instructions.
8. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
  - a. Squareness: Plus or minus **1/16 inch** , measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
  - b. Alignment: Plus or minus **1/16 inch**, measured at jambs on a horizontal line parallel to plane of wall.
  - c. Twist: Plus or minus **1/16 inch**, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
  - d. Plumbness: Plus or minus **1/16 inch**, measured at jambs at floor.

B. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Steel Doors:

- a. Between Door and Frame Jambs and Head: **1/8 inch** plus or minus **1/32 inch** .
- b. Between Edges of Pairs of Doors: **1/8 inch** to **1/4 inch** plus or minus **1/32 inch**.
- c. At Bottom of Door: **3/4 inch** plus or minus **1/32 inch** .
- d. Between Door Face and Stop: **1/16 inch** to **1/8 inch** plus or minus **1/32 inch**.

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

3. Smoke-Control Doors: Install doors and gaskets according to NFPA 105.

C. Glazing: Comply with installation requirements in Section 088000 "Glazing" and with hollow-metal manufacturer's written instructions.

1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than **9 inches** o.c. and not more than **2 inches** o.c. from each corner.

### 3.2 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow-metal work immediately after installation.

C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

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- D. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.
- E. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION 081113

SECTION 081416 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid-core doors with wood-veneer faces.
2. **Factory finishing** flush wood doors.
3. Factory machining for hardware.

B. Related Requirements:

1. Section 088000 "Glazing" for glass view panels in flush wood doors.

1.2 SUBMITTALS

A. Product Data: For each type of door.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; and the following:

1. Dimensions and locations of blocking.
2. Dimensions and locations of mortises and holes for hardware.
3. Dimensions and locations of cutouts.
4. Undercuts.
5. Requirements for veneer matching.
6. Doors to be factory finished and finish requirements.
7. Fire-protection ratings for fire-rated doors.

C. Samples: For factory-finished doors.

D. Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is certified for chain of custody by an FSC-accredited certification body.

B. Quality Standard: In addition to requirements specified, comply with AWI's "Architectural Woodwork Quality Standards Illustrated."

C. Forest Certification: Provide doors made with not less than 70 percent of wood products obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."

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- D. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to UL 10C.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Algoma Hardwoods, Inc.
  2. Ampeco, Inc.
  3. Buell Door Company Inc.
  4. Chappell Door Co.
  5. Eagle Plywood & Door Manufacturing, Inc.
  6. Eggers Industries.
  7. Graham; an Assa Abloy Group company.
  8. Haley Brothers, Inc.
  9. Ideal Architectural Doors & Plywood.
  10. Ipik Door Company.
  11. Lambton Doors.
  12. Marlite.
  13. Marshfield Door Systems, Inc.
  14. Mohawk Flush Doors, Inc.; a Masonite company.
  15. Oshkosh Architectural Door Company.
  16. Poncraft Door Company.
  17. Vancouver Door Company.
  18. VT Industries Inc.
  - 19.

#### 2.2 FLUSH WOOD DOORS, GENERAL

- A. Quality Standard: In addition to requirements specified, comply with **AWI's and WI's "Architectural Woodwork Standard."**
1. Provide **AWI Quality Certification** Labels indicating that doors comply with requirements of grades specified.
- B. WDMA I.S.1-A Performance Grade:
1. Heavy Duty unless otherwise indicated.
  2. Extra Heavy Duty: **public toilets, janitor's closets** and utility rooms.
- C. Particleboard-Core Doors:

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1. Particleboard: ANSI A208.1, Grade LD-1, made with binder containing no urea-formaldehyde.
2. Blocking: Provide wood blocking in particleboard-core doors as needed to eliminate through-bolting hardware.

### 2.3 VENEER-FACED DOORS FOR TRANSPARENT FINISH

#### A. Interior Solid-Core Doors:

1. Grade: **Premium, with Grade A faces**
2. Species: **Red oak** or **White oak**, to be selected by Architect.
3. Cut: **Rotary cut**.
4. Match between Veneer Leaves: **Book** match.
5. Assembly of Veneer Leaves on Door Faces: **Center-balance** match.
6. Pair and Set Match: Provide for doors hung in same opening **or separated only by mullions**.
7. Core: **Glued wood stave**.
8. Construction: **Five or seven** plies. Stiles and rails are bonded to core, then entire unit is abrasive planed before veneering. **Faces are bonded to core using a hot press**.
9. Construction: Seven plies, either bonded or nonbonded construction.

### 2.4 FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
  1. Comply with NFPA 80 requirements for fire-rated doors.
- B. Factory machine doors for hardware that is not surface applied.
- C. Openings: Factory cut and trim openings through doors.
  1. Light Openings: Trim openings with moldings of material and profile indicated.
  2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 088000 "Glazing."
  3. Louvers: Factory install louvers in prepared openings.

### 2.5 SHOP PRIMING

- A. Doors for Opaque Finish: Shop prime faces, all four edges, edges of cutouts, and mortises with one coat of wood primer specified in **Section 099123 Interior Painting**.

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### 2.6 FACTORY FINISHING

- A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
  - 1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on bottom edges, edges of cutouts, and mortises.
- B. Factory finish doors that are indicated to receive transparent finish.
- C. Transparent Finish:
  - 1. Grade: **Premium.**
  - 2. Finish: **WDMA TR-6 catalyzed polyurethane**
  - 3. Staining: **As selected by Architect from manufacturer's full range.**
  - 4. Sheen: **Satin.**

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Hardware: For installation, see **Section 087100 Door Hardware.**
- B. Installation Instructions: Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
  - 1. Install fire-rated doors according to NFPA 80.
  - 2. Install smoke- and draft-control doors according to NFPA 105.
- C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
  - 1. Clearances: Provide **1/8 inch** at heads, jambs, and between pairs of doors. Provide **1/8 inch** from bottom of door to top of decorative floor finish or covering unless otherwise indicated. Where threshold is shown or scheduled, provide **1/4 inch** from bottom of door to top of threshold unless otherwise indicated.
    - a. Comply with NFPA 80 for fire-rated doors.
- D. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- E. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

END OF SECTION 081416

SECTION 083113 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes access doors and frames for walls and ceilings.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each type of access door and frame and for each finish specified.
- C. Product Schedule: For access doors and frames.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Access Doors and Frames: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection **and temperature-rise limit** ratings indicated, according to NFPA 252 or UL 10B.

2.2 ACCESS DOORS AND FRAMES

- A. Flush Access Doors with Exposed Flanges:
  - 1. Description: Face of door flush with frame, with exposed flange and concealed hinge.
  - 2. Locations: **Wall and ceiling.**
  - 3. Metallic-Coated Steel Sheet for Door: **Nominal 0.064 inch, 16 gage, factory primed.**
  - 4. Frame Material: **Same material, thickness, and finish as door.**
  - 5. Latch and Lock: **Cam latch, screwdriver operated.**

2.3 FIRE-RATED ACCESS DOORS AND FRAMES

- A. Fire-Rated, Flush Access Doors with Exposed Flanges:
  - 1. Description: Door face flush with frame, **with a core of mineral-fiber insulation enclosed in sheet metal**; with exposed flange, self-closing door, and concealed hinge.
  - 2. Locations: **Wall and ceiling.**
  - 3. Fire-Resistance Rating: **Not less than that of adjacent construction.**
  - 4. Temperature-Rise Rating: **250 deg F** at the end of 30 minutes.
  - 5. Metallic-Coated Steel Sheet for Door: **Nominal 0.040 inch, 20 gage, factory primed.**

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6. Frame Material: **Same material, thickness, and finish as door**
7. Latch and Lock: Self-latching door hardware, **operated by key**

### 2.4 MATERIALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A 879/A 879M, with cold-rolled steel sheet substrate complying with ASTM A 1008/A 1008M, Commercial Steel (CS), exposed.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum **G60** or **A60** metallic coating.
- D. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666, [**Type 304**] [**Type 316**]. Remove tool and die marks and stretch lines, or blend into finish.
- E. Frame Anchors: Same material as door face.
- F. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

### 2.5 FABRICATION

- A. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.
- B. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish mounting holes, attachment devices and fasteners of type required to secure access doors to types of supports indicated.
- C. Latch and Lock Hardware:
  1. Quantity: Furnish number of latches and locks required to hold doors tightly closed.
  2. Keys: Furnish two keys per lock and key all locks alike.
  3. Mortise Cylinder Preparation: Where indicated, prepare door panel to accept cylinder specified in **Section 087100 Door Hardware**.

### 2.6 FINISHES

- A. Painted Finishes: Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
  1. Factory Primed: Apply manufacturer's standard, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.
  2. Factory Finished: Apply manufacturer's standard baked-enamel or powder-coat finish immediately after cleaning and pretreating, with minimum dry-film thickness of **1 mil** for topcoat.



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- a. Color: **As selected by Architect from full range of industry colors.**

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with manufacturer's written instructions for installing access doors and frames.
- B. Adjust doors and hardware, after installation, for proper operation.

END OF SECTION 083113

## LOVINGTON FIRE STATION # 2

### SECTION 083613 - SECTIONAL DOORS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes **electrically** operated sectional doors.
- B. Related Requirements:
  - 1. Section 055000 "Metal Fabrications" for miscellaneous steel supports.

##### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type and size of sectional door and accessory.
- B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.
- C. Samples: For each exposed product and for each color and texture specified.

##### 1.3 INFORMATIONAL SUBMITTALS

- A. Sample warranty.

##### 1.4 CLOSEOUT SUBMITTALS

- A. Maintenance data.

##### 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.
- B. Installer Qualifications: Authorized representative of the manufacturer with minimum five years documented experience.
- C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.

##### 1.6 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of sectional doors that fail in materials or workmanship within specified warranty period.

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1. Warranty Period: **Two** years from date of Substantial Completion.
- B. Special Finish Warranty: Manufacturer agrees to repair or replace components that show evidence of deterioration of factory-applied finishes within specified warranty period.
  1. Warranty Period: **10** years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Overhead Door Corp., 2501 S. State Hwy. 121, Suite 200, Lewisville, TX 75067. ASD. Tel. Toll Free: (800) 275-3290. Phone: (469) 549-7100. Fax: (972) 906-1499. Web Site: [www.overheaddoor.com](http://www.overheaddoor.com). E-mail: [sales@overheaddoor.com](mailto:sales@overheaddoor.com)
- B. Rasco Industries, Inc.- Chain Link Security Door - [www.bugblocker.com](http://www.bugblocker.com), Mound, MN 800-537-3802

#### 2.2 GLAZED ALUMINUM SECTIONAL OVERHEAD DOORS

- A. Glazed Sectional Overhead Doors: 521 Series Aluminum Doors by OverheadDoor Corporation.
  1. Panel Thickness: 1-3/4 inches (44 mm).
  2. Center Stile Width: 2-11/16 inches (68 mm)
  3. End Stile Width: 3-5/16 inches (84 mm)
  4. Intermediate Rail Pair Width: 3-11/16 inches (94 mm).
  5. Top Rail Width:
    - 1) 2-3/8 inches (60 mm).
    - 2) 3-3/4 inches (95 mm).
  6. Bottom Rail Width:
    - 1) 3-3/4 inches (95 mm).
    - 2) 4-1/2 inches (114 mm).
  7. Aluminum Panels: 0.050 inch (1.3 mm) thick, aluminum.
  8. Stiles and Rails: 6063 - T6 aluminum.
  9. Springs:
    - 1) 10,000 cycles.
    - 2) 25,000 cycles.
    - 3) 50,000 cycles.
    - 4) 75,000 cycles.
    - 5) 100,000 cycles.
  10. Glazing:
    - a. 1/2 inch (12.5 mm) Tempered Insulating glass
  11. Finish Color:
    - a. Powder Coating Finish: Provide RAL 9010- off white for frame and RAL 7001 – grey blue for infill panels or as selected by Architect from manufacturer's standard colors
  12. Windload Design: Provide to meet the Design/Performance requirements specified.
  13. Hardware: Galvanized steel hinges and fixtures. Ball bearing rollers with hardened steel races.

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14. Lock: Interior galvanized single unit.
15. Weatherstripping:
  - a. Flexible bulb-type strip at bottom section.
  - b. Flexible Jamb seals.
  - c. Flexible Header seal.
16. Track: Provide track as recommended by manufacturer to suit loading required and clearances available.
17. Electric Motor Operation: Provide UL listed electric operator, size and type as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per second. Operator shall meet UL325/2010 requirements for continuous monitoring of safety devices
  - a. Entrapment Protection: Required for momentary contact, includes radio control operation
    - 1) Pneumatic sensing edge up to 18 feet (5.5 m) wide. Constant contact only complying with UL 325/2010.
    - 2) Electric sensing edge monitored to meet UL 325/2010.
    - 3) Photoelectric sensors monitored to meet UL 325/2010.
  - b. Operator Controls:
    - 1) Push-button operated control stations with open, close, and stop buttons.
    - 2) Key operated control stations with open, close, and stop buttons.
    - 3) Push-button and key operated control stations with open, close, and stop buttons.
    - 4) Flush mounting.
    - 5) Surface mounting.
    - 6) Interior location.
    - 7) Exterior location.
    - 8) Both interior and exterior location.
  - c. Special Operation:
    - 1) Pull switch.
    - 2) Vehicle detector operation.
    - 3) Radio control operation.
    - 4) Card reader control.
    - 5) Photocell operation.
    - 6) Door timer operation.
    - 7) Commercial light package.
    - 8) Explosion and dust ignition proof control wiring

### 2.2 CHAIN LINK SECURITY DOOR

1. Doors shall be sized for openings as scheduled on the drawings.
2. Chain Link Security Door type shall be installed in conjunction with an overhead door.
3. The Chain Link Security Door shall provide free area for ventilation, while providing inventory security and restricting access for animals, visitors or other unauthorized entry thru the dock door.
4. color: Manufacturer's standard of mill finish. Powder coat option may be selected for additional cost. Color as selected by architect.
5. Operation shall allow either the sectional door or screen door to have smooth travel. Fabricate sections so finished Chain Link screen door assembly is rigid and aligned and free of warp, twist, and deformation.
6. Manufacturers motor operator Provided by "Overhead Doors." Motor operator is to be utilized and the dual track. A solid shaft shall be specified with use of any

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- motor operator regardless of lift.
7. The Chain Link security door may utilize either:
    - a. Manufacturers standard of the Dual Track. Separate track placed behind existing door track allowing either or both doors in down position. Additional upper and lower track, and track clips to be provided by manufacturer. Standard track width is 2" with option of 3" track available.
  8. Lift configuration: Refer to drawings for door height and configuration to work with solid overhead door configuration. Choices include:
    - a. Standard Lift
  9. Springs: Tempered steel with minimum cycle life of 15,000.
  10. Chain Link fence screening material shall be 11 gauge galvanized steel with a wire diameter 0.120" and an opening size of 2" diamond. Chain Link frame to be 2 1/2" x 1 1/2" thick extruded aluminum 1/8th" wall, internally braced corners with 10 gauge galvanized steel plates. The Chain Link screen shall be captivated within the aluminum frame. The mounting hardware shall be commercial grade 11 gauge steel. Track, slide lock, commercial grade hardware, bottom bumpers (for soft closing) and the standard 2" or option of 3" ten ball long stem rollers shall be included

### 2.3 TRACKS, SUPPORTS, AND ACCESSORIES

- A. Tracks: Manufacturer's standard, galvanized-steel track system of configuration indicated, sized for door size and weight, designed for lift type indicated and clearances indicated on Drawings, Provide complete system including brackets, bracing, and reinforcement to ensure rigid support of ball-bearing roller guides for required door type, size, weight, and loading.
  1. Track Reinforcement and Supports: Galvanized-steel members to support track without sag, sway, and vibration during opening and closing of doors. Slot vertical sections of track spaced 2 inches (51 mm) apart for door-drop safety device.
- B. Weatherseals: Replaceable, adjustable, continuous, compressible weather-stripping gaskets of flexible vinyl, rubber, or neoprene fitted to bottom and top of sectional door unless otherwise indicated.
- C. Windows: Manufacturer's standard window units of type, size, and in arrangement indicated. Provide removable stops of same material as door-section frames.

### 2.4 HARDWARE

- A. General: Heavy-duty, corrosion-resistant hardware, with hot-dip galvanized, stainless-steel, or other corrosion-resistant fasteners, to suit door type.
- B. Hinges: Heavy-duty, galvanized-steel hinges at each end stile and at each intermediate stile, according to manufacturer's written recommendations for door size. Attach hinges to door sections through stiles and rails.

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- C. Rollers: Heavy-duty rollers with steel ball-bearings in case-hardened steel races, mounted with varying projections to suit slope of track. Provide **3-inch-** diameter roller tires for **3-inch-** wide track and **2-inch-** diameter roller tires for **2-inch-**wide track.
- D. Push/Pull Handles: Equip each push-up operated or emergency-operated door with galvanized-steel lifting handles on each side of door, finished to match door.

### 2.5 LOCKING DEVICES

- A. Slide Bolt: Fabricate with side-locking bolts to engage through slots in tracks for locking by padlock, located on single-jamb side, operable from inside only.
- B. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded deadbolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.
  - 1. Lock Cylinders: Cylinders **standard with manufacturer and keyed to building keying system.**
  - 2. Keys: **To be determined by Lovington Fire Station** for each cylinder.
- C. Chain Lock Keeper: Suitable for padlock.
- D. Safety Interlock Switch: Equip power-operated doors with safety interlock switch to disengage power supply when door is locked.

### 2.6 COUNTERBALANCE MECHANISM

- A. Torsion Spring: Counterbalance mechanism consisting of adjustable-tension torsion springs fabricated from steel-spring wire complying with ASTM A 229/A 229M, mounted on torsion shaft made of steel tube or solid steel. Provide springs designed for number of operation cycles indicated.
- B. Cable Drums and Shaft for Doors: Cast-aluminum or gray-iron casting cable drums mounted on torsion shaft and grooved to receive door-lifting cables as door is raised. Mount counterbalance mechanism with manufacturer's standard ball-bearing brackets at each end of torsion shaft.
- C. Cables: Galvanized-steel, multistrand, lifting cables.
- D. Cable Safety Device: Include a spring-loaded steel or spring-loaded bronze cam mounted to bottom door roller assembly on each side and designed to automatically stop door if either lifting cable breaks.
- E. Bracket: Provide anchor support bracket as required to connect stationary end of spring to the wall and to level the shaft and prevent sag.
- F. Bumper: Provide spring bumper at each horizontal track to cushion door at end of opening operation.

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### 2.7 MANUAL DOOR OPERATORS

- A. General: Equip door with manual door operator by door manufacturer.
- B. Push-up Operation: Lift handles and pull rope for raising and lowering doors, with counterbalance mechanism designed so that required lift or pull for door operation does not exceed **25 lbf**.
- C. Chain-Hoist Operator: Consisting of endless steel hand chain, chain-pocket wheel and guard, and gear-reduction unit with a maximum **25-lbf** force for door operation. Provide alloy-steel hand chain with chain holder secured to operator guide.

### 2.8 ELECTRIC DOOR OPERATORS

- A. General: Electric door operator assembly of size and capacity recommended and provided by door manufacturer for door and "operation cycles" requirement specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, control stations, control devices, integral gearing for locking door, and accessories required for proper operation.
  - 1. Comply with NFPA 70.
  - 2. Control equipment complying with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6; with NFPA 70, Class 2 control circuit, maximum 24-V ac or dc.
- B. Usage Classification: Electric operator and components capable of operating for not less than number of cycles per hour indicated for each door.
- C. Door-Operator Type: Unit consisting of electric motor, gears, pulleys, belts, sprockets, chains, and controls needed to operate door and meet required usage classification.
- D. Motors: Reversible-type motor with controller (disconnect switch) for motor exposure indicated.
  - 1. Electrical Characteristics:
    - a. Phase: **Single phase**.
    - b. Volts: **115 V**.
    - c. Hertz: 60.
  - 2. Motor Size: Minimum size as indicated. If not indicated, large enough to start, accelerate, and operate door in either direction from any position, at a speed not less than **8 in./sec.** and not more than **12 in./sec.**, without exceeding nameplate ratings or service factor.
- E. Obstruction Detection Device: External entrapment protection consisting of indicated automatic safety sensor capable of protecting full width of door opening. Activation of device immediately stops and reverses downward door travel.
  - 1. Photoelectric Sensor: Manufacturer's standard system designed to detect an obstruction in door opening without contact between door and obstruction.

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- a. Self-Monitoring Type: Designed to interface with door operator control circuit to detect damage to or disconnection of sensing device. When self-monitoring feature is activated, door closes only with sustained pressure on close button.
2. Electric Sensor Edge: Automatic safety sensor edge, located within astragal or weather stripping mounted to bottom section. Contact with sensor activates device. Connect to control circuit using manufacturer's standard take-up reel or self-coiling cable.
  - a. Self-Monitoring Type: Four-wire configured device designed to interface with door-operator control circuit to detect damage to or disconnection of sensor edge.
- F. Control Station: Three-button control station in fixed location with momentary-contact push-button controls labeled "Open" and "Stop" and sustained- or constant-pressure, push-button control labeled "Close."
  1. Interior-Mounted Units: Full-guarded, surface-mounted, heavy-duty type, with general-purpose NEMA ICS 6, Type 1 enclosure.
  2. Exterior-Mounted Units: Full-guarded, standard-duty, surface-mounted, weatherproof type, NEMA ICS 6, Type 4 enclosure, key operated.
- G. Emergency Manual Operation: Equip electrically powered door with capability for emergency manual operation. Design manual mechanism so required force for door operation does not exceed **25 lbf**.
- H. Emergency Operation Disconnect Device: Equip operator with hand-operated disconnect mechanism for automatically engaging manual operator and releasing brake for emergency manual operation while disconnecting motor without affecting timing of limit switch. Mount mechanism so it is accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.
- I. Motor Removal: Design operator so motor may be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.
- J. Audible and Visual Signals: Audible alarm and visual indicator lights in compliance with regulatory requirements for accessibility.
- K. Portable, Radio-Control System: Consisting of **to be determined by Lovington Fire Station** of the following:
  1. Three-channel universal coaxial receiver to open, close, and stop door.
  2. Portable control device to open and stop door may be momentary-contact type; control to close door shall be sustained- or constant-pressure type.



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### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Install sectional doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.
- B. Tracks: Provide sway bracing, diagonal bracing, and reinforcement as required for rigid installation of track and door-operating equipment.
- C. Accessibility: Install sectional doors, switches, and controls along accessible routes in compliance with regulatory requirements for accessibility.
- D. Power-Operated Doors: Install[ **automatic garage doors openers**] according to UL 325.
- E. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion.
- F. Touch-up Painting: Immediately after welding galvanized materials, clean welds and abraded galvanized surfaces and repair galvanizing to comply with ASTM A 780/A 780M.

#### 3.2 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain sectional doors.

END OF SECTION 083613

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### SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. **Exterior and interior** storefront framing.
2. Storefront framing for punched openings.
3. **Exterior and interior** manual-swing entrance doors **and door-frame units**].

##### 1.2 PREINSTALLATION MEETINGS

###### A. Preinstallation Conference: Conduct conference at **Project site**.

##### 1.3 ACTION SUBMITTALS

###### A. Product Data: For each type of product.

###### B. Sustainable Design Submittals:

1. Product Data: For sealants, indicating VOC content.
2. Laboratory Test Reports: For sealants, indicating compliance with requirements for low-emitting materials.~\$s~12~S\$

###### C. Shop Drawings: Include plans, elevations, sections, full-size details, and attachments to other work.

1. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.

###### D. Samples: For each exposed finish required.

###### E. Entrance Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams.

###### F. Delegated-Design Submittal: For aluminum-framed entrances and storefronts indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

##### 1.4 INFORMATIONAL SUBMITTALS

###### A. Energy Performance Certificates: NFRC-certified energy performance values from manufacturer.

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- B. Product test reports.
- C. Field quality-control reports.
- D. Sample warranties.

### 1.5 CLOSEOUT SUBMITTALS

- A. Maintenance data.

### 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. Testing Agency Qualifications: Qualified according to ASTM E 699 for testing indicated [ **and accredited by IAS or ILAC Mutual Recognition Arrangement as complying with ISO/IEC 17025.**
- C. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
  - 1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

### 1.7 WARRANTY

- A. Special Warranty: **Installer** agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: **Two** years from date of Substantial Completion.
- B. Special Finish Warranty: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Warranty Period: **20** years from date of Substantial Completion.

## LOVINGTON FIRE STATION # 2

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Wind Loads: Provide storefront system, including, but not limited to, anchorage, capable of withstanding wind load design pressures of 20 psf. Retain "Delegated Design" Paragraph below if Contractor is required to assume responsibility for design.
- B. Air Infiltration: Not more than 0.060 cfm (0.00003 m<sup>3</sup>/s) per square foot (0.09 m<sup>2</sup>) (projected area of module) at 6.24 psf (299 Pa) static air pressure differential, when tested in accordance with ASTM E283.
- C. Water Leakage: There shall be no uncontrolled water entry at 12 psf (575 Pa) test pressure as defined in AAMA 501.
- D. Thermal Cycling: There shall be no buckling, stress on glass, edge seal failure, excess stress on structure, anchors and fasteners, or reduction in performance when tested in accordance with AAMA 501.5 at a temperature range of 0 degrees F (-18 degrees C) to 180 degrees F (82 degrees C).
- E. Structural Performance: Structural performance shall be based on a maximum allowable deflection of L/175 of the clear span for spans up to 13'-6" (4115 mm) or L/240 of clear span plus 1/4 inch (6 mm) for spans greater than 13'-6" (4115 mm), or an amount that restricts edge deflection of individual glazing lites of glass to 3/4 inch (19 mm), whichever is smaller. The system shall perform to those criteria under the wind load specified for this Project.
- F. Thermal Transmittance: Thermal transmittance due to conduction (Uc) shall not be greater than 0.71 Btu/hour/ft<sup>2</sup>/°F, per AAMA 1503. Condensation resistance factor (CRF) for the frame shall not be less than 35 and for the glass CRF shall be not less than 56, per AAMA 1503.
- G. Thermal Transmittance: Thermal transmittance due to conduction (Uc) shall not be greater than 0.46 Btu/hour/ft<sup>2</sup>/°F poured and debridged only (or 0.63 Btu/hour/ft<sup>2</sup>/°F slotted only) per AAMA 1503. Condensation resistance factor (CRF) shall not be less than 54 (poured and debridged only) per AAMA 1503.
  - 1. Azon® Thermal Pocket Lance: A mechanical lock between the polyurethane material and aluminum provided by an approved applicator who shall adhere to strict quality control procedures and testing to qualify for the 10 year warranty against failure of the thermal barrier polymer due to dry shrinkage and fracturing.
- H. Seismic Cycling: There shall be no life/safety type failures (glass breakage, anchor failures, structural damage, etc.) when tested in accordance with AAMA 501.4, seismic test (lateral cycling).
- I. Sound Rating: The system shall have a sound transmission class (STC) rating of 32 and an outdoor-indoor transmission class (OITC) rating of 26 when tested in accordance with ASTM E90, ASTM E413 and ASTM E1332.

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### 2.2 MANUFACTURERS

- A. Basis of Design: Product specified is "T14000 Series Flush Glaze," center-glazed system, 2 inches (51 mm) by 4-1/2 inches (114 mm), as manufactured by Tubelite, Inc. Items specified are to establish a standard of quality for design, function, materials, and appearance. Equivalent products by listed manufacturers are acceptable. The Architect will be the sole judge of the basis of what is equivalent.
- B. Basis of Design: (FITNESS ROOM) Product specified is "400 Series Curtainwall" as manufactured by Tubelite, Inc. Items specified are to establish a standard of quality for design, function, materials, and appearance. Equivalent products by listed manufacturers are acceptable. The Architect will be the sole judge of the basis of what is equivalent.
  - 1. Provide 4" back member.
  - 2. For window types F1, F2 & F3 Installer to provide steel reinforcement within the vertical mullions as required to sufficiently brace against wind- loads of 120 MPH

### 2.3 MATERIALS

- A. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of th

### 2.4 ENTRANCE DOOR HARDWARE

- A. Entrance Door Hardware: Hardware not specified in this Section is specified in **Section 087100 "Door Hardware**.
- B. General: Provide entrance door hardware **and entrance door hardware sets indicated in door and frame schedule** for each entrance door to comply with requirements in this Section.
  - 1. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
  - 2. Opening-Force Requirements:
    - a. Egress Doors: Not more than **15 lbf** to release the latch and not more than **30 lbf** to set the door in motion **and not more than 15 lbf to open the door to its minimum required width**].
    - b. Accessible Interior Doors: Not more than **5 lbf** to fully open door.
- C. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of entrance door hardware are indicated in "Entrance Door Hardware Sets" Article. Products are identified by using entrance door hardware designations as follows:
  - 1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in "Entrance Door Hardware Sets" Article.
  - 2. References to BHMA Standards: Provide products complying with these standards and requirements for description, quality, and function.
- D. Pivot Hinges: BHMA A156.4, Grade 1.

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1. Offset-Pivot Hinges: Provide top, bottom, and intermediate offset pivots at each door leaf.
- E. Butt Hinges: BHMA A156.1, Grade 1, radius corner.
1. Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while entrance door is closed.
  2. Exterior Hinges: **Stainless steel, with stainless-steel pin.**
- F. Continuous-Gear Hinges: Manufacturer's standard with stainless-steel bearings between knuckles, fabricated to full height of door and frame.
- G. Mortise Auxiliary Locks: BHMA A156.5, Grade 1.
- H. Manual Flush Bolts: BHMA A156.16, Grade 1.
- I. Automatic and Self-Latching Flush Bolts: BHMA A156.3, Grade 1.
- J. Panic Exit Devices: BHMA A156.3, Grade 1, listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.
- K. Cylinders: **As specified in Section 087100 Door Hardware.**
- L. Strikes: Provide strike with black-plastic dust box for each latch or lock bolt; fabricated for aluminum framing.
- M. Operating Trim: BHMA A156.6.
- N. Removable Mullions: BHMA A156.3, extruded aluminum.
1. When used with panic exit devices, provide removable mullions listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305. Use only mullions that have been tested with exit devices to be used.
- O. Closers: BHMA A156.4, Grade 1, with accessories required for a complete installation, sized as required by door size, exposure to weather, and anticipated frequency of use; adjustable to comply with field conditions and requirements for opening force.
- P. Concealed Overhead Holders: BHMA A156.8, Grade 1.
- Q. Surface-Mounted Holders: BHMA A156.16, Grade 1.
- R. Door Stops: BHMA A156.16, Grade 1, floor or wall mounted, as appropriate for door location indicated, with integral rubber bumper.
- S. Weather Stripping: Manufacturer's standard replaceable components.
- T. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.

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- U. Silencers: BHMA A156.16, Grade 1.
- V. Thresholds: BHMA A156.21, raised thresholds beveled with a slope of not more than 1:2, with maximum height of **1/2 inch (12.7 mm)**.
- W. Finger Guards: Manufacturer's standard collapsible neoprene or PVC gasket anchored to frame hinge-jamb at center-pivoted doors.

### 2.5 GLAZING

- A. Glazing: Comply with Section 088000 "Glazing."
- B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.
- C. Glazing Sealants: As recommended by manufacturer.

### 2.6 FABRICATION

- A. Form or extrude aluminum shapes before finishing.
- B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- C. Fabricate components that, when assembled, have the following characteristics:
  - 1. Profiles that are sharp, straight, and free of defects or deformations.
  - 2. Accurately fitted joints with ends coped or mitered.
  - 3. Physical and thermal isolation of glazing from framing members.
  - 4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
  - 5. Provisions for field replacement of glazing from **exterior**.
  - 6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- E. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.
- F. Entrance Doors: Reinforce doors as required for installing entrance door hardware.
- G. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.
- H. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

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### 2.7 ALUMINUM FINISHES

- A. Class I Clear Anodized Finish: AA-M10-C21-A41 complying with AAMA 611.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

#### A. General:

1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure nonmovement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
6. Seal perimeter and other joints watertight unless otherwise indicated.

#### B. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

- C. Set continuous sill members and flashing in full sealant bed as specified in Section 079200 "Joint Sealants" to produce weathertight installation.

- D. Install components plumb and true in alignment with established lines and grades.

- E. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.

- F. Install glazing as specified in Section 088000 "Glazing."

- G. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points.

1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

### 3.2 FIELD QUALITY CONTROL

- A. General: See Section 01 45 23 - Inspecting and Testing Services.

1. Water Leakage Test: After completion of the installation and nominal curing of sealants, test for water leaks in accordance with AAMA 501.2



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2. Connections: Inspecting and testing agency shall inspect all connections and welds.

END OF SECTION 084113

SECTION 084523 – FIBERGLASS-SANDWICH-PANELS ASSEMBLIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes the insulated sandwich panel system and accessories as shown and specified. Work includes providing and installing:
  - 1. Wall assemblies
  - 2. Roof assemblies
  - 3. Skylight assemblies
  - 4. Canopy assemblies

1.2 SUBMITTALS

- A. Submit manufacturer's product data. Include construction details, material descriptions, profiles and finishes of components.
- B. Submit manufacturer's color charts showing the full range of colors available for factory finished aluminum.
  - 1. When requested, submit samples for each exposed finish required, in same thickness and material indicated for the work and in size indicated below. If finishes involve normal color variations, include sample sets consisting of two or more units showing the full range of variations expected.
    - a. Sandwich panels: 14" x 28" units
    - b. Factory finished aluminum: 5" long sections
- C. Submit Installer Certificate, signed by installer, certifying compliance with project qualification requirements.
- D. Submit product reports from a qualified independent testing agency indicating each type and class of panel system complies with the project performance requirements, based on comprehensive testing of current products. Previously completed reports will be acceptable if for current manufacturer and indicative of products used on this project.
  - 1. Reports required (if applicable) are:
    - a. International Building Code Evaluation Report (AC 177)
    - b. Flame Spread and Smoke Developed (UL 723) – Submit UL Card
    - c. Burn Extent (ASTM D 635)
    - d. Color Difference (ASTM D 2244)
    - e. Impact Strength (UL 972)
    - f. Bond Tensile Strength (ASTM C 297 after aging by ASTM D 1037)

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- g. Bond Shear Strength (ASTM D 1002)
- h. Beam Bending Strength (ASTM E 72)
- i. Insulation U-Factor (NFRC 100)
- j. NFRC System U-Factor Certification (NFRC 700)
- k. NFRC Visible Light Transmittance (NFRC 202)
- l. Solar Heat Gain Coefficient (NFRC or Calculations)
- m. Condensation Resistance Factor (AAMA 1503)
- n. Air Leakage (ASTM E 283)
- o. Structural Performance (ASTM E 330)
- p. Water Penetration (ASTM E 331)

### 1.3 QUALITY ASSURANCE

#### A. Manufacturer's Qualifications:

1. Material and products shall be manufactured by a company continuously and regularly employed in the manufacture of specified materials for a period of at least ten consecutive years and which can show evidence of those materials being satisfactorily used on at least six projects of similar size, scope and location. At least three of the projects shall have been in successful use for ten years or longer.
2. Panel system must be listed by an ANSI accredited Evaluation Service, which requires quality control inspections and fire, structural and water infiltration testing of sandwich panel systems by an accredited agency.
3. Quality control inspections shall be conducted at least once each year and shall include manufacturing facilities, sandwich panel components and production sandwich panels for conformance with AC177 "Translucent Fiberglass Reinforced Plastic (FRP) Faced Panel Wall, Roof and Skylight Systems" as issued by the ICC-ES.

#### B. Installer's Qualifications: Installation shall be by an experienced installer, which has been in the business of installing specified panel systems for at least two consecutive years and can show evidence of satisfactory completion of projects of similar size, scope and type.

### 1.4 PERFORMANCE REQUIREMENTS

#### A. The manufacturer shall be responsible for the configuration and fabrication of the complete panel system.

1. When requested, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
2. Standard panel system shall have less than 0.01 cfm/ft<sup>2</sup> air leakage by ASTM E 283 at 6.24 PSF (50 mph) and no water penetration by ASTM E 331 at 15 PSF; and structural testing by ASTM E 330.
3. Structural Loads (Wall Assemblies). Provide system capable of handling the following loads:
  - a. Positive Wind Load (PSF): Consult Structural engineer
  - b. Negative Wind Load (PSF): Consult Structural engineer

#### B. Deflection Limits:

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1. Wall Panel Assemblies: Limited to L/60 of clear span for each assembly component.

### 1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver panel system, components and materials in manufacturer's standard protective packaging.
- B. Store panels on the long edge; several inches above the ground, blocked and under cover in accordance with manufacturer's storage and handling instructions.

### 1.6 WARRANTY

- A. Provide manufacturer's and installer's written warranty agreeing to repair or replace panel system work, which fails in materials or workmanship within one year from the date of delivery. Failure of materials or workmanship shall include excessive deflection, deterioration of finish on metal in excess of normal weathering, defects in accessories, insulated translucent sandwich panels and other components of the work.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURER

- A. Kalwall Corporation, Tel: (800) 258-9777 – Fax: (603) 627-7905 – Web: [www.kalwall.com](http://www.kalwall.com) - Email: [agonzales@daylighting-solutions.com](mailto:agonzales@daylighting-solutions.com)

### 2.2 PANEL COMPONENTS

- A. Face Sheets:
  1. Translucent faces: Manufactured from glass fiber reinforced thermoset resins, formulated specifically for architectural use.
    - a. Thermoplastic (e.g. polycarbonate, acrylic) faces are not acceptable.
    - b. Face sheets shall not deform, deflect or drip when subjected to fire or flame.
  2. Interior face sheets:
    - a. Flame spread: Underwriters Laboratories (UL) listed, which requires periodic unannounced retesting, with flame spread rating no greater than 50 and smoke developed no greater than 250 when tested in accordance with UL 723.
    - b. Burn extent by ASTM D 635 shall be no greater than 1”.
  3. Exterior face sheets:
    - a. Color stability: Full thickness of the exterior face sheet shall not change color more than 3 CIE Units DELTA E by ASTM D 2244 after 5 years outdoor South Florida weathering at 5° facing south, determined by the average of at least three white samples with and without a protective film or coating to ensure long-term color stability. Color stability shall be unaffected by abrasion or scratching.

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- b. Strength: Exterior face sheet shall be uniform in strength, impenetrable by hand held pencil and repel an impact minimum of 70 ft. lbs. without fracture or tear when impacted by a 3-1/4" diameter, 5 lb. free-falling ball per UL 972.
  - c. Strength: Exterior face sheet shall be uniform in strength, with panel meeting ASTM E1996 and ASTM E1886 or TAS 201, 202 and 203.
  - d. Erosion Protection: Integral, embedded-glass erosion barrier.
4. Appearance:
- a. Exterior face sheet: Smooth, .070 thick and Crystal in color.
  - b. Interior face sheet: Smooth, .045 thick and Crystal in color.
  - c. Face sheets shall not vary more than  $\pm 10\%$  in thickness and be uniform in color.
- B. Grid Core:
1. Thermally broken composite I-beam grid core shall be of 6063-T6 or 6005-T5 alloy and temper with provisions for mechanical interlocking of muntin-mullion and perimeter. Width of I-beam shall be no less than 7/16".
  2. I-beam Thermal break: Minimum 1", thermoset fiberglass composite. Poured and de-bridged thermal break is not acceptable.
- C. Laminate Adhesive:
1. Heat and pressure resin type adhesive engineered for structural sandwich panel use, with minimum 25-years field use. Adhesive shall pass testing requirements specified by the International Code Council "Acceptance Criteria for Sandwich Panel Adhesives".
  2. Minimum tensile strength of 750 PSI when the panel assembly is tested by ASTM C 297 after two exposures to six cycles each of the aging conditions prescribed by ASTM D 1037.
  3. Minimum shear strength of the panel adhesive by ASTM D 1002 after exposure to four separate conditions:
    - a. 50% Relative Humidity at 68° F: 540 PSI
    - b. 182° F: 100 PSI
    - c. Accelerated Aging by ASTM D 1037 at room temperature: 800 PSI
    - d. Accelerated Aging by ASTM D 1037 at 182° F: 250 PSI

### 2.3 PANEL CONSTRUCTION

- A. Provide sandwich panels of flat fiberglass reinforced translucent face sheets laminated to a grid core of mechanically interlocking I-beams. The adhesive bonding line shall be straight, cover the entire width of the I-beam and have a neat, sharp edge.
1. Thickness: 2-3/4 inches
  2. Visible Light Transmittance (VLT):
    - a. Visible LT (NFRC 202) by NFRC certified laboratory: 35 %.
  3. Solar heat gain coefficient 0.29
  4. Panel U-factor by NFRC certified laboratory:
    - a. 2-3/4" thermally broken grid 0.23 U factor
  5. Complete insulated panel system shall have NFRC certified U-factor of 0.28
  6. Grid pattern as viewed: Nominal size **24" x 12"** ; pattern shoji

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- B. Standard panels shall deflect no more than 1.9" at 30 PSF in 10'-0" span without a supporting frame by ASTM E 72.
- C. Standard panels shall withstand 1200° F fire for minimum one hour without collapse or exterior flaming.
- D. Thermally broken panels: Minimum Condensation Resistance Factor of 80 by AAMA 1503 measured on the bond line.

### 2.4 BATTENS AND PERIMETER CLOSURE SYSTEM

- A. Closure system:
  - 1. Thermally broken extruded aluminum 6063-T6 and 6063-T5 alloy and temper clamp-tite screw type closure system.
- B. Sealing tape: Manufacturer's standard, pre-applied to closure system at the factory under controlled conditions.
- C. Fasteners: 300 series stainless steel screws for aluminum closures, excluding final fasteners to the building.
- D. Finish:
  - 1. Manufacturer's factory applied finish, which meets the performance requirements of AAMA 2604. Color to be selected from manufacturer's standards.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Installer shall examine substrates, supporting structure and installation conditions.
- B. Do not proceed with panel installation until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Metal Protection:
  - 1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
  - 2. Where aluminum will contact concrete, masonry or pressure treated wood, protect against corrosion by painting contact surfaces with bituminous paint or method recommended by manufacturer.

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### 3.3 INSTALLATION

- A. Install the panel system in accordance with the manufacturer's suggested installation recommendations and approved shop drawings.
  - 1. Anchor component parts securely in place by permanent mechanical attachment system.
  - 2. Accommodate thermal and mechanical movements.
  - 3. Set perimeter framing in a full bed of sealant compound, or with joint fillers or gaskets to provide weather-tight construction.
- B. Install joint sealants at perimeter joints and within the panel system in accordance with manufacturers suggested installation instructions.

### 3.4 CLEANING

- A. Clean the panel system interior and exterior, immediately after installation.
- B. Refer to manufacturer's written recommendations.

END OF SECTION 084523

SECTION 086200 - UNIT SKYLIGHTS

PART 1 - GENERAL

1.1 SUMMARY

- a. Section Includes:
  - 1. Tubular daylighting device

1.2 ACTION SUBMITTALS

- a. Product Data: For each type of daylighting device.
- b. Shop Drawings: For daylighting device work. Include plans, elevations, sections, details, and connections to supporting structure and other adjoining work.
- c. Samples: For each type of exposed finish required and each type of glazing.

1.3 INFORMATIONAL SUBMITTALS

- a. Qualification data.
- b. Product test reports.
- c. Field quality-control reports.
- d. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

- a. Maintenance data.

1.5 WARRANTY

- a. Special Warranty: Manufacturer agrees to repair or replace components of unit skylights that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: 10 years from date of Substantial Completion.



PART 2 - PRODUCTS

2.1 MANUFACTURERS

- a. Acceptable Manufacturer: Solatube International, Inc., which is located at: 2210 Oak Ridge Way; Vista, CA 92081-8341; Email:[request\\_info\\_\(agonzales@daylighting-solutions.com\)](mailto:request_info_(agonzales@daylighting-solutions.com)); Web:[www.solatube.com](http://www.solatube.com)

2.2 PERFORMANCE REQUIREMENTS

- a. Completed tubular daylighting device assemblies shall be capable of meeting the following performance requirements:
  1. Air Infiltration Test:
    - a. Air infiltration will not exceed 0.30 cfm/sf aperture with a pressure delta of 1.57 psf across the tube when tested in accordance with ASTM E 283.
  2. Water Resistance Test:
    - a. No uncontrolled water leakage at 10.5 psf pressure differential with water rate of 5 gallons/hour/sf when tested in accordance with ASTM E 547.
  3. Uniform Load Test: All units tested with a safety factor of (3) for positive pressure and (2) for negative pressure, acting normal to plane of roof in accordance with ASTM E 330.
    - a. No breakage, permanent damage to fasteners, hardware parts, or damage to make system inoperable or cause excessive permanent deflection of any section when tested at a Positive Load of 150 psf (7.18 kPa) or Negative Load of 60 psf (2.87 kPa) in accordance with ICC AC-16 Section A, or Negative Load of 70 psf (3.35 kPa) if tested per ICC AC-16 Section B.
  4. Fire Testing:
    - a. Fire Rated Roof Assemblies:
      - a) Roof Assemblies: When used with the Dome Edge Protection Band and mounted on curbs 4 inches high or greater, all domes shall meet the prescriptive fire rating requirements for Class A, B, and C roof assemblies as described in the 2012 International Building Code.
    - b. When used with the Dome Edge Protection Band, all domes meet fire rating requirements as described in the International Building Code.
    - c. Self-Ignition Temperature - Greater than 650 degrees F per ASTM D-1929.
    - d. Smoke Density: Rating no greater than 450 per ASTM Standard E 84 in way intended for use. Classification C.
    - e. Rate of Burn and/or Extent: Maximum Burning Rate: 2.5 inches/min (62 mm/min) Classification CC-2 per ASTM D 635.
    - f. Rate of Burn and/or Extent: Maximum Burn Extent: 1 inch (25 mm) Classification CC-1 per ASTM D 635

2.3 TUBULAR DAYLIGHTING DEVICE

- a. Tubular Daylighting Devices General : Transparent roof-mounted skylight dome and self-flashing curb, reflective tube, and ceiling level diffuser assembly, transferring sunlight to interior spaces; complying with ICC AC-16.

## LOVINGTON FIRE STATION # 2

- b. SolaMaster Series: Solatube Model 330 DS-C Penetrating Ceiling, 21 inch (530 mm) Daylighting System:
  - 1. Roof Dome Assembly: Transparent, UV and impact resistant dome with flashing base supporting dome and top of tube.
    - a. Glazing: Type DA, 0.143 inch (3.7 mm) minimum thickness injection molded acrylic classified as CC2 material; UV inhibiting (100 percent UV C, 100 percent UV B and 98.5 percent UV A), impact modified acrylic blend.
- c. LightTracker Reflector, made of aluminum sheet, thickness 0.015 inch (0.4 mm) with Spectralight Infinity. Positioned in the dome to capture low angle sunlight.
- d. Roof Flashing Base:
  - e. One Piece: One piece, seamless, leak-proof flashing functioning as base support for dome and top of tube. Sheet steel, corrosion resistant conforming to ASTM A 653/A 653M or ASTM A 463/A 463M or ASTM A 792/A792 M, 0.028 inch (0.7 mm) plus or minus .006 inch (.015 mm) thick.
    - 1. Base Style: Type FC, Curb cap, with inside dimensions of 27 inches by 27 inches (685 mm x 685 mm) to cover curb as specified in Section 07600.
- e. Curb Cap Insulation: Type CCI, Nominal 1 inch thick thermal isolation pad to reduce thermal conduction between curb-cap and tubing and thermal convection between room air and curb-cap. Rated R-6 (OFxft2xhr/Btu) Insulation is Polyisocyanurate foam utilizing CFC, HCFC, & HFC free blowing agent. Type-1 Class-1 per ASTM C 1289; Passes UL 1715 (15-minute thermal barrier per IBC 2603.4); Attic ventilation may be required per IBC 1203.2(OFxft2xhr/Btu)
- f. Tube Ring: Attached to top of base section; 0.090 inch (2.3 mm) nominal thickness injection molded high impact PVC; to prevent thermal bridging between base flashing and tubing and channel condensed moisture out of tubing.
- g. Dome Seal: Adhesive backed weatherstrip 0.63 inch (16 mm) tall by 0.28 inch (7 mm).
- h. Reflective Tubes: Aluminum sheet, thickness 0.018 inch (0.5 mm).
  - 1. General:
    - a. Interior Finish: Spectralight Infinity with Cool Tube Technology combining ultra-high Visible Light reflectance with Ultra-low Infrared (IR) reflectance. Patented spectrally-selective optical surface yields specular reflectance greater than 99 percent for the Visible Light spectrum (400 nm to 760 nm) and less than 20% reflectance for Infrared (IR) wavelengths longer than 980nm, resulting in a spectrally-selective Total Solar Spectrum (400 nm to 2500 nm) less than 80.2 percent.
    - b. Color: a\* and b\* (defined by CIE L\*a\*b\* color model) shall not exceed plus 2 or be less than minus 2 as determined in accordance to ASTM E 308.
  - 2. Top Tube Angle Adapter and Bottom Tube Angle Adapter Kit, Type AK:
  - 3. Reflective 45 degree adjustable top and bottom angle adapters (one each), 16 inches (406 mm) long
  - 4. Extension Tube:
  - 5. Reflective extension tube, Type EXX, Notched for Open Ceiling diffuser attachment, 24 inches (610 mm) or 48 inches (1220 mm) long.
- i. Diffuser Assemblies for Tubes Penetrating Ceilings: Solatube Model 330 DS-C. Ceiling mounted box transitioning from round tube to square ceiling assembly, supporting light

## LOVINGTON FIRE STATION # 2

transmitting surface at bottom termination of tube 23.8 inches by 23.8 inches (605 mm by 605 mm) square frame to fit standard suspended ceiling grids or hard ceilings.

- a. Round to square transition box made of opaque polymeric material, classified as CC2, Class C, 0.110 inch (2.8 mm) thick.
- b. Lens: Type L2 Prismatic lens design to maximize light output and diffusion with extruded aluminum frame and EPDM foam seal to minimize condensation and bug, dirt and air infiltration per ASTM E 283. Visible Light Transmission shall be greater than 90 percent at 0.100 inches (2.5 mm) thick. Classified as CC2.
- c. Supplemental Natural Effect Lens made of acrylic, classified as CC2, Class C, 0.060 inch (1.5 mm) thick, with open cell foam seal to minimize condensation and bug, dirt and air infiltration per ASTM E 283. Insert number to complete drawing designation. Use these designations on Drawings to identify each unit skylight.

### PART 3 - EXECUTION

#### 3.1 ACCESSORIES

- a. Fasteners: Same material as metals being fastened, non-magnetic steel, non-corrosive metal of type recommended by manufacturer, or injection molded nylon.
- b. Suspension Wire: Steel, annealed, galvanized finish, size and type for application and ceiling system requirement.
- c. Sealant: Polyurethane or copolymer based elastomeric sealant as provided or recommended by manufacturer

#### 3.2 INSTALLATION

- a. Coordinate installation of unit skylight with installation of substrates, vapor retarders, roof insulation, roofing membrane, and flashing as required to ensure that each element of the Work performs properly and that combined elements are waterproof and weathertight.
- b. Comply with recommendations in AAMA 1607 and with manufacturer's written instructions for installing unit skylights.

#### 3.3 FIELD QUALITY CONTROL

- a. After completion of installation and nominal curing of sealant and glazing compounds but before installation of interior finishes, test for water leaks according to AAMA 501.2.
- b. Perform test for total area of each unit skylight.
- c. Work will be considered defective if it does not pass tests and inspections.
- d. Additional testing and inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

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3.4 CLEANING

- a. Clean exposed unit skylight surfaces according to manufacturer's written instructions. Touch up damaged metal coatings and finishes.

END OF SECTION 086200

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Mechanical door hardware for the following:
  - a. Swinging doors.
  - b. Sliding doors.
  - c. Folding doors.
2. Cylinders for door hardware specified in other Sections.
3. Electrified door hardware.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
- B. Keying Conference: Conduct conference at **Project site**.

1.3 SUBMITTALS

- A. Hardware Schedule: Within 10 days after receipt of a contract for the finish hardware, prepare a complete schedule and submit 8 copies of the hardware schedule with 3 copies of catalogue cuts, highlighted to show each different hardware item to the Architect for review
- B. Do not order hardware until an approved copy of the schedule is returned to the supplier bearing the approval of the Architect.
  1. This schedule shall indicate the following details:
  2. Door numbers
  3. Location
  4. Size and thickness of door
  5. Door material
  6. Frame materials
  7. Hand of door
  8. Degree of opening
  9. Type of attachment
- C. Templates: After receipt of the approved corrected hardware schedule, upon request the hardware supplier shall send 4 sets of templates and corrected hardware schedule to the general contractor for distribution to the wood door, metal door, and frame manufacturers/suppliers.

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1.4 QUALITY ASSURANCE

- A. SUPPLIER QUALIFICATIONS: The hardware supplier must have in his/her employment an Architectural Hardware Consultant (AHC), as recognized by the Door And Hardware Institute, with a minimum of 10 years of Architectural Hardware experience or an equivalent person with 20 years of Architectural Hardware experience, who shall be responsible for the detailing, scheduling, and ordering of the finish hardware for this Contract.
- B. DESIGN CRITERIA: Provide Underwriter’s Laboratory listed hardware for fire or accident hazard where scheduled or required to maintain rating of openings. Comply with requirements of door and door frame labels. Comply with NFPA No. 80 and local codes that are in effect in the area of the project.

1.5 WARRANTY

- A. Furnish 1 copy of the following written warranty to be included in the Maintenance
  - 1. Warranty against mechanical failure of exit devices for a 3 year period
  - 2. Warranty against mechanical failure of locksets for a 10 year period
  - 3. Warranty against mechanical failure of door closers for a 20 year period.
  - 4. Warranty against failure of parts of all hardware except exit devices, locksets, and door closers for a 1 year period.
  - 5. Starting date for all warranty periods to be the date of substantial completion of building by Architect.
    - a.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Butts:	Ives, Bommer, Hager	IVE
B. Exit Devices:	Falcon, Von Duprin, Sargent	FAL
C. Door Closers:	LCN, Norton, Yale	LCN
D. Automatic Operators	LCN, Norton, Besam	LCN
E. Locksets:	Falcon, Yale, Corbin Russwin	FAL
F. Cylinders:	Falcon, Schlage, Yale, Corbin Russwin	FAL
G. Thresholds & Weatherstrip:	Zero, National Guard, Reese, Pemko	ZER
H. Stops & Door Trim:	Ives, Trimco, Don-Jo	IVE

OTHER MANUFACTURERS BY PRIOR APPROVAL OF THE ARCHITECT AND LISTED IN AN ADDENDUM.

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### 2.02 SCHEDULED HARDWARE

- A. Requirements for design: grade, function, finish, size, and other distinctive qualities of each type of Builders Hardware is indicated in the Hardware Schedule at the end of this section. Products are identified by using manufacturer's hardware product numbers.
- B. Manufacturer's Product Designation: One or more manufacturers are listed for each hardware type required. The initial after the manufacturer's name indicates whose product designation is used in the Hardware Schedule for purposes of establishing minimum requirements. Provide either the product designated or where more than one manufacturer is listed, the comparable product of one of the other manufacturers that comply with requirements including those specified elsewhere in the section

### 2.03 MATERIALS AND FABRICATION

- A. Hand of Door: The drawings show the direction of slide, swing, or hand of each door leaf. Furnish each item of hardware for proper installation and operation of the door movement as shown.
- B. Base Metals: Produce hardware units of the basic metal and forming method indicated using the manufacturer's standard metal alloy, composition, temper, and hardness. Do not furnish "optional" materials or forming methods for those indicated except as otherwise specified.
- C. Fasteners: Manufacture hardware to conform to published templates generally prepared for machine screw installation. Do not provide hardware that has been prepared for self-tapping screws except as specifically indicated.
  - 1. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match the hardware finish or if exposed in surfaces of other work to match the finish of such other work as closely as possible including "prepared for paint" in surfaces to receive painted finish.
    - a. Sex Bolts: Install door closer, door holders, and exit devices on ALL doors by means of thru bolts and sex nuts.
  - 2. Provide concealed fasteners for hardware units that are exposed when the door is closed except to the extent no standard units of the type specified are available with concealed fasteners

### 2.04 BUTTS, HINGES, AND PIVOTS

- A. Templates: Provide only template produced units.
- B. Screws: Furnish Phillips flat-head all purpose or machine screws for installation of units except furnish Phillips flat-head all purpose wood screws for installation of units into wood. Finish screw heads to match surface of hinges or pivots.

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- C. Hinge Pins: Except as otherwise indicated provide hinge pins as follows:
  - 1. Steel Hinges: Steel pins
  - 2. Non-ferrous Hinges: Stainless steel pins
  - 3. Exterior Doors: Non-removable pins (NRP)
  - 4. Interior doors: Non-rising pins
  - 5. Tips. Flat button and matching plug finished to match leaves
- D. Number of hinges: Provide number of hinges indicated but not less than 3 hinges per door leaf for doors 90" or less in height and 1 additional hinge for each 30" of additional height.
- E. Size of hinge leaves: 4.5" high, except 5" for doors over 3'6" wide.
- F. Width of hinges: Shall be sufficient to clear trim projection when door swings 180 degrees.
- G. Fire Rated doors over 8'0" shall have heavy weight hinges.
- H. All hinges SHALL be made of steel and have steel ball bearings where specified.

2.05 KEYING

- A. The hardware supplier shall make available to the Architect and/or Owner a representative for the purpose of consulting and reviewing the project's keying requirements and make a written proposal of the complete key system.
- B. Proposed key plan shall include expansion potential for the Owner's future requirements.
- C. All locksets and cylinders SHALL be keyed to a Grand or Simple Masterkey system and to the instructions as provided by the Architect/Owner. All locksets and cylinders shall be construction masterkeyed or have construction cores/cylinders.
- D. Permanent cylinders shall be keyed / combined in sets or subsets, master keyed or grand master keyed, as directed by Owner. Permanent keys and cylinders shall be marked with the applicable blind code for identification. These visual key control marks or codes will not include the actual key cuts. Permanent keys will also be stamped "Do Not Duplicate". Keys and cylinder identification stamping to be approved by Architect and Owner. Failure to properly comply with these requirements may be cause to require replacement of all or any part of the cylinders and keys involved as deemed necessary at no additional cost to the Owner.
- E. Equip locks and cylinders with full size cylinders with nickel silver blocking pin to check for patented feature on keys. Provide a minimum of six pins with nickel silver bottom pins. Cylinders must allow for multiplex master keying, combined to Owner's instructions.



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- F. Deliver all permanent key blanks and other security keys direct to Owner's representative from the factory by secure courier, return receipt requested. Failure to properly comply with these requirements may be cause to require replacement of all or any part of the cylinders and keys involved as deemed necessary at no additional cost to the Owner.
- G. Keys Required: Furnish quantity of keys as follows:
  - 1. Five (5) Master Keys
  - 2. Two (2) keys per lock or cylinder.
  - 3. Fifteen (15) construction keys.
  - 4. Two (2) Control/Core keys.
- H. All keys shall be made of nickel silver.

### 2.06 CYLINDRICAL TYPE LOCKSETS

- A. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1.
- B. Cylinders: Refer to "KEYING" article, herein.
- C. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with a 1/2 inch (13 mm) latch throw. Provide proper latch throw for UL listing at pairs.
- D. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
- E. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
- F. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
- G. Provide electrified options as scheduled in the hardware sets.
- H. Lever Trim: Solid cast levers without plastic inserts, and wrought roses on both sides.
- I. Lever Design: Falcon D-Dane.
- J. Tactile Warning (Knurling): Where required by authority having jurisdiction. Provide on levers on exterior (secure side) of doors serving rooms considered to be hazardous.
- K. Manufacturers and Product: Falcon T Series, Yale 5400 Series, Corbin Russwin CL3300 Series.

### 2.07 CLOSER AND DOOR CONTROL DEVICES

- A. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.

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- B. Provide door closers with fully hydraulic, full rack and pinion action with cast aluminum cylinder.
- C. Closer Body: 1-1/2 inch (38 mm) diameter with 11/16 inch (17 mm) diameter heat-treated pinion journal and full complement bearings.
- B. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and all weather requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
- C. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
- D. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and back check.
- E. Closers shall NOT be supplied with "Pressure Relief Valves".
- F. Provide stick on templates, special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.
- G. Manufacturers and Product: LCN 4050 Series, Norton 7500 Series, Yale 4400 Series.

### 2.08 ELECTRO-HYDRAULIC AUTOMATIC OPERATORS

- A. Provide low energy automatic operator units with hydraulic closer complying with ANSI/BHMA A156.19.
- B. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
- C. Provide units with conventional door closer opening and closing forces unless power operator motor is activated. Provide door closer assembly with adjustable spring size, back-check, and opening and closing speed adjustment valves to control door
- D. Provide units with on/off switch for manual operation, motor start up delay, vestibule interface delay, electric lock delay, and door hold open delay.
- E. Provide units with conventional door closer opening and closing forces unless power operator motor is activated. Provide door closer assembly with adjustable spring size, back-check valve, sweep valve, latch valve to control door.
- F. Provide drop plates, brackets, or adapters for arms as required for details.
- G. Provide hard-wired actuator switches for operation as specified.

## LOVINGTON FIRE STATION # 2

- H. Provide weather-resistant actuators at exterior applications.
- I. Provide key switches with LED's, recommended and approved by manufacturer of automatic operator as required for function described in operation description of hardware group below. Cylinders: Refer to "KEYING" article, herein.
- J. Provide complete assemblies of controls, switches, power supplies, relays, and parts/material recommended and approved by manufacturer of automatic operator for each individual leaf. Actuators control both doors simultaneously at pairs. Sequence operation of exterior and vestibule doors with automatic operators to allow ingress or egress through both sets of openings as directed by Architect. Locate actuators, key switches, and other controls as directed by Architect.
- K. Provide units with vestibule inputs that allow sequencing operation of two units, and SPDT relay for interfacing with latching or locking devices.
- L. Manufacturers and Product: LCN 4600 Series, Norton 6000 Series, Besam Power Swing.

### 2.09 EXIT DEVICES

- A. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1, and UL listed for Panic Exit or Fire Exit Hardware. Cylinders: Refer to "KEYING" article, herein.
- B. Exit Devices: Touchpad type, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
- C. Touchpad: Extend minimum of one half of door width. Match exit device finish or provide compatible finish. No plastic inserts are allowed in touchpads.
- D. Provide devices with deadlatching feature for security and for future addition of alarm kits and other electrical requirements.
- E. Provide flush end caps for exit devices.
- F. Provide manufacturer's standard strikes.
- G. Provide exit devices cut to door width and height. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
- H. All latchbolts for wide stile devices shall be deadlocking with 3/4" throw and have a self-lubricating coating to reduce friction and wear.
- I. Mount mechanism case flush on face of doors, or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
- J. Provide cylinder hex key dogging at non-fire-rated exit devices.

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- K. Removable Mullions: 2 inches (51 mm) x 3 inches (76 mm) steel tube. Where scheduled as keyed removable mullion, provide type that can be removed by use of a keyed cylinder, which is self-locking when re-installed.
- L. Where lever handles are specified as outside trim for exit devices, provide heavy-duty lever trims with forged or cast escutcheon plates. Provide vandal-resistant levers that will travel to 90-degree down position when more than 35 pounds of torque are applied, and which can easily be re-set.
  - 1. Lever Style: Match lever style of locksets.
  - 2. Tactile Warning (Knurling): Where required by authority having jurisdiction. Provide on levers on exterior (secure side) of doors serving rooms considered to be hazardous.
- M. Provide UL labeled fire exit hardware for fire rated openings.
- N. Provide electrified options as scheduled in the hardware sets.
- O. Manufacturers and Product: Falcon 24/25 Series, Von Duprin 33A/99 Series, Sargent 80 Series.

### 2.10 MISCELLANEOUS DOOR TRIM UNITS

- A. Material shall be brass, bronze or stainless steel as appropriate for required finish. Brass bronze material to be 0.050" minimum thickness and stainless steel to be 0.050" minimum thickness. Edges of plates to be beveled and polished except lower edge can be square.
- B. Width of plates shall be 2" less than door width.
- C. Push Plates: Plate shall be 4" x 16".
- D. Pull Plates: Plate shall be 4" x 16". Grip shall be extruded or cast stainless steel located on center of plate.
- E. Smoke Seal shall be a self-adhesive SILICONE material measuring 3/8" x 1/4".

### 2.10 TOOLS FOR MAINTENANCE

- A. Furnish a complete set of specialized tools as needed for Owner's continued adjustment, maintenance and removal or replacement of finish hardware.

## **PART 3 – EXECUTION**

### 3.01 INSTALLATION

- A. General: All finish hardware shall be installed by the General Contractor.

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- B. Furnish all items of hardware with attachment screws, bolts, nuts, etc., as required to attach hardware to type of material involved and with finish to match hardware with which they are to be used. Make all attachments to metal by template machine screws.
- C. Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Closers shall not be visible in corridors, lobbies and other public spaces unless approved by Architect. Template closer to hit adjacent wall or floor stop as required even if door is only shown to swing 90° on architectural floor plans.
- D. Attach hardware to masonry or concrete with expansion bolts or similar drilled anchors to develop full strength of attached device.
- E. Run weatherstripping or soundstripping full height of both jambs and full width of head. Run thresholds full width of opening. Run door bottoms full width of doors. Set expansion anchors in solid masonry, not mortar joints. Set thresholds in caulking by sealant contractor.

### 3.02 PROTECTION

- A. Do not install door silencers, kickplates, pushplates, door bottoms, and wall stops until after painting is complete. Loosen locksets and panic hardware prior to painting and re-tighten after painting is complete. Mask all hardware or otherwise protect during painting operation.

### 3.03 ADJUST AND CLEAN

- A. Check and adjust each operating item of hardware and each door to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.
- B. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, return to the work during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.
- C. Instruct Owner's personnel in proper adjustment and maintenance of hardware and the hardware finishes during the final adjustment of hardware.
- D. Adjust all closers to meet ADA Requirements for sweep time and opening force. Set the closer's backcheck valve to slow the doors opening from 85 degrees on.

### 3.04 HARDWARE SCHEDULE

- A. It is intended the following schedule include all item of finish hardware necessary to complete the work; if a discrepancy is found in the schedule, such as a missing item,

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improper hardware for frame, door, or fire codes, the Preamble will be the deciding document.

- B. All items shall be of proper type for attaching securely to type of material on which they occur.
- C. The schedule of materials is as follows:

**⚡ = Hardware Item Requiring Electrical Coordination**

HARDWARE SET: 01

DOOR NUMBER:  
100

EACH TO HAVE:

6 EA	HW HINGE	5BB1HW 5 X 4.5 NRP	652	IVE
1 EA	POWER TRANSFER	EPT10	⚡ 689	VON
1 EA	REMOVABLE MULLION	KR4023-STAB	USP	FAL
1 EA	PANIC HARDWARE	25-R-EO	626	FAL
1 EA	ELEC PANIC HARDWARE	LM-EL-25-R-NL-OP	⚡ 626	FAL
1 EA	RIM CYLINDER	951	626	FAL
1 EA	MORTISE CYLINDER	985 - CAM AS REQ'D	626	FAL
2 EA	OFFSET PULL	8190HD-10"	630	IVE
1 EA	SURFACE CLOSER	4050 RW/PA (TOP JAMB MOUNT)	689	LCN
1 EA	SURF. AUTO OPERATOR	4642 WMS	⚡ 689	LCN
1 EA	MOUNTING PLATE	4050-18G	689	LCN
2 EA	ACTUATOR	8310-856	⚡ 630	LCN
2 EA	WALL STOP	WS407CVX	630	IVE
1 EA	MULLION SEAL	8780N X D.H.	BLK	ZER
2 EA	DOOR SWEEP	39A X D.W.	719	ZER
1 EA	THRESHOLD	8655A X D.W.	719	ZER
1 EA	CARD READER	BY ACCESS CONTROL INTEGRATOR	⚡ BLK	SCE
2 EA	DOOR CONTACT	679-05 WD OR HM AS REQ'D	⚡ BLK	SCE
1 EA	MOTION SENSOR	SCANII	⚡ BLK	SCE
1 EA	POWER SUPPLY	PS914 900-BBK 900-2RS	⚡ LGR	VON
1 EA	WIRING DIAGRAM	POINT TO POINT / RISER	⚡	SCE
1 SET	SEALS	BY ALUMINUM FRAME SUPPLIER		
2 EA	HAIRPIN STOP	BY OTHERS		

DOORS NORMALLY CLOSED AND LOCKED.

ENTRY BY VALID CREDENTIAL AT CARD READER OR BY KEY AT RIM CYLINDER.

RX MOTION SENSOR SHUNTS DOOR FORCED OPEN ALARM IN ACCESS CONTROL SYSTEM.

FREE EGRESS AT ALL TIMES.

LOVINGTON FIRE STATION # 2

NOTE: THE EXTERIOR WALL ACTUATOR SHALL BE WIRED IN SERIES WITH THE "LM" SWITCH IN THE EXIT DEVICE - SUCH THAT WHEN THE EXIT DEVICE IS UNLOCKED BY THE CARD READER ON THE EXTERIOR, THE EXTERIOR WALL ACTUATOR IS ACTIVE, AND THE OPERATOR WILL OPEN THE DOOR WHEN THE WALL ACTUATOR IS PUSHED. THE INTERIOR WALL ACTUATOR SHALL BE WIRED TO WHERE WHEN PUSHED THE "EL" ON THE EXIT DEVICE WILL RETRACT AND THE OPERATOR WILL OPEN THE DOOR.

HARDWARE SET: 02

DOOR NUMBER:

101

EACH TO HAVE:

3 EA	HW HINGE	5BB1HW 5 X 4.5 NRP	652	IVE
1 EA	POWER TRANSFER	EPT10	⚡ 689	VON
1 EA	ELEC PANIC HARDWARE	EL-25-R-NL-OP	⚡ 626	FAL
1 EA	RIM CYLINDER	951	626	FAL
1 EA	OFFSET PULL	8190HD-10"	630	IVE
1 EA	SURFACE CLOSER	4050 RW/PA (TOP JAMB MOUNT)	689	LCN
1 EA	MOUNTING PLATE	4050-18G	689	LCN
1 EA	WALL STOP	WS407CVX	630	IVE
1 EA	CARD READER	BY ACCESS CONTROL INTEGRATOR	⚡ BLK	SCE
1 EA	DOOR CONTACT	679-05 WD OR HM AS REQ'D	⚡ BLK	SCE
1 EA	MOTION SENSOR	SCANII	⚡ BLK	SCE
1 EA	POWER SUPPLY	PS914 900-BBK 900-2RS	⚡ LGR	VON
1 EA	WIRING DIAGRAM	POINT TO POINT / RISER	⚡	SCE
1 SET	SEALS	BY ALUMINUM FRAME SUPPLIER		

DOORS NORMALLY CLOSED AND LOCKED.

ENTRY BY VALID CREDENTIAL AT CARD READER OR BY KEY AT RIM CYLINDER.

RX MOTION SENSOR SHUNTS DOOR FORCED OPEN ALARM IN ACCESS CONTROL SYSTEM.

FREE EGRESS AT ALL TIMES.

LOVINGTON FIRE STATION # 2

HARDWARE SET: 03

DOOR NUMBER:

102

EACH TO HAVE:

3 EA	HW HINGE	5BB1HW 5 X 4.5 NRP	652	IVE
1 EA	CLASSROOM LOCK	T561P6 DANE	626	FAL
1 EA	SURFACE CLOSER	4050 RW/PA (TOP JAMB MOUNT)	689	LCN
1 EA	MOUNTING PLATE	4050-18G	689	LCN
1 EA	WALL STOP	WS407CVX	630	IVE
1 SET	SEALS	BY ALUMINUM FRAME SUPPLIER		

HARDWARE SET: 04

DOOR NUMBER:

103                    104

EACH TO HAVE:

3 EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1 EA	PRIVACY LOCK	T301S DANE	626	FAL
1 EA	SURFACE CLOSER	4050 RW/PA	689	LCN
1 EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1 EA	WALL STOP	WS407CCV	630	IVE
3 EA	SILENCER	SR64	GRY	IVE

HARDWARE SET: 05

DOOR NUMBER:

105

EACH TO HAVE:

3 EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1 EA	ENTRY / OFFICE LOCK	T511P6 DANE	626	FAL
1 EA	WALL STOP	WS407CCV	630	IVE
3 EA	SILENCER	SR64	GRY	IVE



LOVINGTON FIRE STATION # 2

HARDWARE SET: 06

DOOR NUMBER:

106

EACH TO HAVE:

6 EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1 EA	REMOVABLE MULLION	KR4023-STAB	USP	FAL
1 EA	PANIC HARDWARE	25-R-DT-512	626	FAL
1 EA	PANIC HARDWARE	25-R-NL-512	626	FAL
2 EA	MORTISE CYLINDER	985 - CAM AS REQ'D	626	FAL
2 EA	SURFACE CLOSER	4050 SCUSH	689	LCN
2 EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1 SET	SEALS	8303AA X D.S.	719	ZER
1 EA	MULLION SEAL	8780N X D.H.	BLK	ZER
2 EA	DOOR SWEEP	39A X D.W.	719	ZER
1 EA	THRESHOLD	8655A X D.W.	719	ZER
1 EA	RAIN DRIP	142A X D.W. +4"	719	ZER

HARDWARE SET: 07

DOOR NUMBER:

107

EACH TO HAVE:

3 EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1 EA	FIRE EXIT HARDWARE	F-25-R-L-511-DANE	626	FAL
1 EA	MORTISE CYLINDER	985 - CAM AS REQ'D	626	FAL
1 EA	SURFACE CLOSER	4050 EDA	689	LCN
1 EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1 EA	WALL STOP	WS407CVX	630	IVE
1 SET	SEALS	8303AA X D.S.	719	ZER
1 EA	DOOR SWEEP	39A X D.W.	719	ZER
1 EA	THRESHOLD	8655A X D.W.	719	ZER

HARDWARE SET: 08

DOOR NUMBER:

109

EACH TO HAVE:

3 EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1 EA	STOREROOM LOCK	T581P6 DANE	626	FAL
1 EA	OH STOP	900S SNB	630	GLY
3 EA	SILENCER	SR64	GRY	IVE

LOVINGTON FIRE STATION # 2

HARDWARE SET: 09

DOOR NUMBER:

110

EACH TO HAVE:

3 EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1 EA	POWER TRANSFER	EPT10	⚡ 689	VON
1 EA	EU STOREROOM LOCK	T881P6 DANE	⚡ 626	FAL
1 EA	SURFACE CLOSER	4050 RW/PA	689	LCN
1 EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1 EA	WALL STOP	WS407CVX	630	IVE
3 EA	SILENCER	SR64		GRY IVE
1 EA	CARD READER	BY ACCESS CONTROL INTEGRATOR	⚡ BLK	SCE
1 EA	DOOR CONTACT	679-05 WD OR HM AS REQ'D	⚡ BLK	SCE
1 EA	MOTION SENSOR	SCANII	⚡ BLK	SCE
1 EA	POWER SUPPLY	PS902 900-BBK	⚡ LGR	SCE
1 EA	WIRING DIAGRAM	POINT TO POINT / RISER	⚡	SCE

DOORS NORMALLY CLOSED AND LOCKED.

ENTRY BY VALID CREDENTIAL AT CARD READER OR BY KEY AT LOCK.

RX MOTION SENSOR SHUNTS DOOR FORCED OPEN ALARM IN ACCESS CONTROL SYSTEM.

FREE EGRESS AT ALL TIMES.

HARDWARE SET: 10

DOOR NUMBER:

111A                    111B                    121

EACH TO HAVE:

3 EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1 EA	ELEC PANIC HARDWARE	EL-25-R-NL	⚡ 626	FAL
1 EA	MORTISE CYLINDER	985 - CAM AS REQ'D	626	FAL
1 EA	SURFACE CLOSER	4050 EDA	689	LCN
1 EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1 EA	WALL STOP	WS407CVX	630	IVE
1 SET	SEALS	8303AA X D.S.	719	ZER
1 EA	DOOR SWEEP	39A X D.W.	719	ZER
1 EA	THRESHOLD	8655A X D.W.	719	ZER
1 EA	RAIN DRIP	142A X D.W. +4"	719	ZER
1 EA	CARD READER	BY ACCESS CONTROL INTEGRATOR	⚡ BLK	SCE
1 EA	DOOR CONTACT	679-05 WD OR HM AS REQ'D	⚡ BLK	SCE
1 EA	MOTION SENSOR	SCANII	⚡ BLK	SCE
1 EA	POWER SUPPLY	PS914 900-BBK 900-2RS	⚡ LGR	VON
1 EA	WIRING DIAGRAM	POINT TO POINT / RISER	⚡	SCE
1 EA	HAIRPIN STOP	BY OTHERS		

LOVINGTON FIRE STATION # 2

HARDWARE SET: 11

DOOR NUMBER:

111C	111D	111E	111F	112A	112B
112C	112D	113A	113B	113C	113D
114A	114B	114C	114D		

EACH TO HAVE:

ALL HARDWARE BY DOOR MANUFACTURER

HARDWARE SET: 12

DOOR NUMBER:

115

EACH TO HAVE:

3 EA	HW HINGE	5BB1HW 5 X 4.5	652	IVE
1 EA	CLASSROOM LOCK	T561P6 DANE	626	FAL
1 EA	SURFACE CLOSER	4050 HW/PA	689	LCN
1 EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1 EA	WALL STOP	WS407CVX	630	IVE
3 EA	SILENCER	SR64	GRY	IVE

HARDWARE SET: 13

DOOR NUMBER:

116

EACH TO HAVE:

6 EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
2 EA	MANUAL FLUSH BOLT	FB458	626	IVE
1 EA	DUST PROOF STRIKE	DP2	626	IVE
1 EA	STOREROOM LOCK	T581P6 DANE 3/4"	626	FAL
1 EA	OH STOP	900S SNB	630	GLY
1 EA	SURFACE CLOSER	4050 SCUSH	689	LCN
2 EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1 SET	SEALS	8303AA X D.S.	719	ZER
1 EA	ASTRAGAL	43SP X 188S X D.H.	SP	ZER
2 EA	DOOR SWEEP	39A X D.W.	719	ZER
1 EA	THRESHOLD	8655A X D.W.	719	ZER
1 EA	RAIN DRIP	142A X D.W. +4"	719	ZER

LOVINGTON FIRE STATION # 2

HARDWARE SET: 14

DOOR NUMBER:

117

EACH TO HAVE:

6 EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
2 EA	MANUAL FLUSH BOLT	FB458	626	IVE
1 EA	DUST PROOF STRIKE	DP2	626	IVE
1 EA	CLASSROOM LOCK	T561P6 DANE 3/4"	626	FAL
1 EA	OH STOP	900S SNB	630	GLY
2 EA	SURFACE CLOSER	4050 SHCUSH	689	LCN
2 EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1 EA	ASTRAGAL	43SP X 188S X D.H.	SP	ZER
2 EA	SILENCER	SR64	GRY	IVE

HARDWARE SET: 15

DOOR NUMBER:

118

EACH TO HAVE:

3 EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1 EA	CLASSROOM LOCK	T561P6 DANE	626	FAL
1 EA	SURFACE CLOSER	4050 HW/PA	689	LCN
1 EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1 EA	WALL STOP	WS407CVX	630	IVE
3 EA	SILENCER	SR64	GRY	IVE

HARDWARE SET: 16

DOOR NUMBER:

122                      123                      124                      126                      127                      128

EACH TO HAVE:

3 EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1 EA	PASSAGE SET	T101S DANE	626	FAL
1 EA	SURFACE CLOSER	4050 RW/PA	689	LCN
1 EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1 EA	WALL STOP	WS407CVX	630	IVE
1 SET	SEALS	188S X D.S.	BLK	ZER
1 EA	COAT AND HAT HOOK	571	626	IVE

LOVINGTON FIRE STATION # 2

HARDWARE SET: 17

DOOR NUMBER:

125

EACH TO HAVE:

3 EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1 EA	PUSH PLATE	8200 4" X 16"	630	IVE
1 EA	PULL PLATE	8302 6" 4" X 16"	630	IVE
1 EA	SURFACE CLOSER	4050 RW/PA	689	LCN
1 EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1 EA	WALL STOP	WS407CVX	630	IVE
3 EA	SILENCER	SR64	GRY	IVE

HARDWARE SET: 18

DOOR NUMBER:

130                    131                    132

EACH TO HAVE:

3 EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1 EA	PRIVACY LOCK	T301S DANE	626	FAL
1 EA	OH STOP	900S SNB	630	GLY
1 EA	SURFACE CLOSER	4050 RW/PA	689	LCN
1 EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
3 EA	SILENCER	SR64	GRY	IVE

HARDWARE SET: 19

DOOR NUMBER:

133                    134

EACH TO HAVE:

3 EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1 EA	PUSH PLATE	8200 4" X 16"	630	IVE
1 EA	PULL PLATE	8302 6" 4" X 16"	630	IVE
1 EA	OH STOP	900S SNB	630	GLY
1 EA	SURFACE CLOSER	4050 RW/PA	689	LCN
1 EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
3 EA	SILENCER	SR64	GRY	IVE

END OF SECTION 087100

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
  - 1. Glass for
    - a. Windows
    - b. Doors
    - c. interior borrowed lites
    - d. storefront framing
    - e. glazed curtain walls
  - 2. Glazing sealants and accessories.

1.2 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.3 SUBMITTALS

- A. Product Data: For each type of product.
- B. Sustainable Design Submittals:
- C. Glass Samples: For each type of glass product other than clear monolithic vision glass; 12 inches square.
- D. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.
- E. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- F. Preconstruction adhesion and compatibility test report.

1.4 QUALITY ASSURANCE

- A. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.

## LOVINGTON FIRE STATION # 2

### 1.5 PRECONSTRUCTION TESTING

- A. Preconstruction Adhesion and Compatibility Testing: Test each glass product, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.
  - 1. Testing is not required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.

### 1.6 WARRANTY

- A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
  - 1. Warranty Period: **10** years from date of Substantial Completion.
- B. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.
  - 1. Warranty Period: **10** years from date of Substantial Completion.
- C. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
  - 1. Warranty Period: **10** years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

### 2.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design glazing.

## LOVINGTON FIRE STATION # 2

- B. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the International Building Code and ASTM E 1300.
1. Design Wind Pressures: As indicated on Drawings.
  2. Design Snow Loads: **As indicated on Drawings.**
  3. Thickness of Patterned Glass: Base design of patterned glass on thickness at thinnest part of the glass.
  4. Differential Shading: Design glass to resist thermal stresses induced by differential shading within individual glass lites.
- C. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.
- D. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
1. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as **Btu/sq. ft. x h x deg F (W/sq. m x K).**
  2. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
  3. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

### 2.3 GLASS PRODUCTS, GENERAL

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
1. GANA Publications: "Glazing Manual."
  2. AAMA Publications: AAMA GDSG-1, "Glass Design for Sloped Glazing," and AAMA TIR A7, "Sloped Glazing Guidelines."
  3. IGMA Publication for Sloped Glazing: IGMA TB-3001, "Guidelines for Sloped Glazing."
  4. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."
- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of **the SGCC**. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IgCC.
- D. Thickness: Where glass thickness is indicated, it is a minimum. **Provide glass that complies with performance requirements and is not less than the thickness indicated.**
- E. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass **as needed to comply with**



**"Performance Requirements" Article.** Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass **as needed to comply with "Performance Requirements" Article.** Where fully tempered float glass is indicated, provide fully tempered float glass.

#### 2.4 GLASS PRODUCTS

- A. Clear Annealed Float Glass: ASTM C 1036, Type I, Class 1 (clear), Quality-6mm (1/4") annealed or tempered as required.

#### 2.5 LAMINATED GLASS

- A. Laminated Glass: ASTM C 1172. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.
  - 1. Construction: Laminate glass with **polyvinyl butyral interlayer** to comply with interlayer manufacturer's written instructions.
  - 2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.
  - 3. Interlayer Color: Clear unless otherwise indicated.

#### 2.6 INSULATING GLASS

- A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190.
  - 1. Sealing System: Dual seals.
  - 2. Spacer: **Manufacturer's standard spacer material and construction.**

#### 2.7 GLAZING SEALANTS

- A. General:
  - 1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
  - 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
  - 3. Colors of Exposed Glazing Sealants: **As selected by Architect from manufacturer's full range.**

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### 2.8 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
  - 1. AAMA 804.3 tape, where indicated.
  - 2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
  - 3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
  - 1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
  - 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

### 2.9 MISCELLANEOUS GLAZING MATERIALS

- A. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- B. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- C. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- D. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- E. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

## PART 3 - EXECUTION

### 3.1 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

## LOVINGTON FIRE STATION # 2

- C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).
- G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

### 3.2 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Apply heel bead of elastomeric sealant.
- F. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- G. Apply cap bead of elastomeric sealant over exposed edge of tape.

### 3.3 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without

## LOVINGTON FIRE STATION # 2

developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

### 3.4 SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

### 3.5 CLEANING AND PROTECTION

- A. Immediately after installation remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
  - 1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.
- C. Remove and replace glass that is damaged during construction period.

### 3.6 MONOLITHIC GLASS SCHEDULE

- A. Glass Type **GL-1a, GL-1b**: Clear **annealed or tempered as required**.
  - 1. Minimum Thickness: **6 mm** .
  - 2. Safety glazing where required.

3.7 INSULATING GLASS SCHEDULE

A. Glass Type GL-1c Acid Etch Glass

1. Basis-of-Design: Walker Textures
2. Minimum Thickness: **6 mm**.
3. Acid Etch Tempered Glass

B. Glass Type **GL-2a** Tinted Spandrel Insulated Glass

1. Basis-of-Design Product: [PPG Industries, Inc.](#)
2. Overall Unit Thickness: **1 inch**.
3. Minimum Thickness of Each Glass Lite: **6 mm**.
4. Outdoor Lite: ¼” PPG Azuria Heat Strengthened
5. Interspace Content: ½” (Air Fill)
6. Indoor Lite: ¼” Clear painted with warm gray ceramic frit (4)
7. Winter Nighttime U-Factor: **0.47** maximum.
8. Summer Daytime U-Factor: **0.50** maximum.
9. Safety glazing required.

C. Glass Type **GL-2b and GL -2c**: Tinted insulating glass with Low-E-coated

1. Basis-of-Design Product: Vitro/ [PPG Industries, Inc.](#)
2. Overall Unit Thickness: **1 inch**.
3. Minimum Thickness of Each Glass Lite: **6 mm**.
4. Outdoor Lite: ¼” **PPG Azuria Heat Strengthened or Tempered as Required**
5. Interspace Content: ½” **Air**.
6. Indoor Lite: ¼” **PPG Solarban 60 (3)**
7. Visible Light Transmittance: 54%
8. Solar Heat Gain Coefficient: .31
9. Winter Nighttime U-Factor: **0.29** maximum.
10. Summer Daytime U-Factor: **0.27** maximum.
11. Safety glazing required.

D. Glass Type **GL-3a** Tinted Reflective Spandrel Insulated Glass

1. Basis-of-Design Product: [PPG Industries, Inc.](#)
2. Overall Unit Thickness: **1 inch**.
3. Minimum Thickness of Each Glass Lite: **6 mm**.
4. Outdoor Lite: ¼” PPG Solarcool Azuria (2) Heat Strengthened
5. Interspace Content: ½” (Air Fill)
6. Indoor Lite: ¼” Clear painted with warm gray ceramic frit (4)
7. Winter Nighttime U-Factor: **0.47** maximum.
8. Summer Daytime U-Factor: **0.50** maximum.
9. Safety glazing required.

E. Glass Type **GL-3b and GL-3c**: Tinted Reflective insulating glass with Low E

1. Basis-of-Design Product: [PPG Industries, Inc.](#)
2. Overall Unit Thickness: **1 inch**.
3. Minimum Thickness of Each Glass Lite: **6 mm**.

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4. Outdoor Lite: ¼" PPG Solarcool Azuria Reflective # 2 Heat Strengthened or **Tempered**
5. Interspace Content: ½" (Air Fill)
6. Indoor Lite: PPG Solarban 60 (3)
7. Visible Light Transmittance: 21%
8. Solar Heat Gain Coefficient: 17
9. Winter Nighttime U-Factor: **0.27** maximum.
10. Summer Daytime U-Factor: **0.28** maximum.
11. Safety glazing required.

END OF SECTION 088000

SECTION 092216 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Non-load-bearing steel framing systems for interior partitions.
  - 2. Suspension systems for interior ceilings and soffits.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

- A. Evaluation reports for firestop tracks.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.2 FRAMING SYSTEMS

- A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
  - 1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
  - 2. Protective Coating: **ASTM A 653/A 653M, G40**, hot-dip galvanized unless otherwise indicated.
- B. Studs and Runners: ASTM C 645.
  - 1. Steel Studs and Runners:
    - a. Minimum Base-Metal Thickness: 25 Gauge **0.0269 inch**.

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### b. Depth: **As indicated on Drawings**

- C. Slip-Type Head Joints: Where indicated, provide[**one of**] the following:
1. Clip System: Clips designed for use in head-of-wall deflection conditions that provide a positive attachment of studs to runners while allowing **2-inch** minimum vertical movement.
  2. Single Long-Leg Runner System: ASTM C 645 top runner with **2-inch-** deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top runner and with continuous bridging located within **12 inches** of the top of studs to provide lateral bracing.
  3. Double-Runner System: ASTM C 645 top runners, inside runner with **2-inch-** deep flanges in thickness not less than indicated for studs and fastened to studs, and outer runner sized to friction fit inside runner.
  4. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
- D. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.
- E. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
1. Minimum Base-Metal Thickness: **As indicated on Drawings**.
- F. Cold-Rolled Channel Bridging: Steel, **0.0538-inch** minimum base-metal thickness, with minimum **1/2-inch-**wide flanges.
1. Depth: **As indicated on Drawings**.
  2. Clip Angle: Not less than **1-1/2 by 1-1/2 inches** thick, galvanized steel.
- G. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
1. Minimum Base-Metal Thickness: **25 gauge 0.0296 inches**.
  2. Depth: **As indicated on Drawings**.
- H. Resilient Furring Channels: **1/2-inch** deep, steel sheet members designed to reduce sound transmission.
1. Configuration: **Asymmetrical or hat shaped**.
- I. Cold-Rolled Furring Channels: **0.053-inch** uncoated-steel thickness, with minimum **1/2-inch** wide flanges.
1. Depth: **As indicated on Drawings**.
  2. Furring Brackets: Adjustable, corrugated-edge-type steel sheet with minimum uncoated-steel thickness of **0.0329 inch**.
  3. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, **0.062-inch** diameter wire, or double strand of **0.048-inch** diameter wire.



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- J. Z-Shaped Furring: With slotted or nonslotted web, face flange of **1-1/4 inch**, wall attachment flange of **7/8 inch**, minimum uncoated-metal thickness of **0.0179 inch**, and depth required to fit insulation thickness indicated.

### 2.3 SUSPENSION SYSTEMS

- A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, **0.062-inch** diameter wire, or double strand of **0.048-inch** diameter wire.
- B. Hanger Attachments to Concrete:
  - 1. Expansion Anchors: Fabricated from corrosion-resistant materials, with allowable load or strength design capacities calculated according to ICC-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing per ASTM E 488/E 488M conducted by a qualified testing agency.
  - 2. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with allowable load capacities calculated according to ICC-ES AC70, greater than or equal to the design load, as determined by testing per ASTM E 1190 conducted by a qualified testing agency.
- C. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, **0.16 inch** in diameter.
- D. Flat Hangers: Steel sheet, **1 by 3/16 inch**.
- E. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of **0.0538 inch** and minimum **1/2-inch** wide flanges.
  - 1. Depth: **2-1/2 inches**.
- F. Furring Channels (Furring Members):
  - 1. Cold-Rolled Channels: **0.0538-inch** uncoated-steel thickness, with minimum **1/2-inch** wide flanges, **3/4 inch** deep.
  - 2. Steel Studs and Runners: ASTM C 645.
    - a. Minimum Base-Metal Thickness: **25 gauge 0.0296 inch (0.752 mm)**.
    - b. Depth: **As indicated on Drawings**.
  - 3. Hat-Shaped, Rigid Furring Channels: ASTM C 645, **7/8 inch** deep.
    - a. Minimum Base-Metal Thickness: **0.0179 inch**.
  - 4. Resilient Furring Channels: **1/2-inch** deep members designed to reduce sound transmission.
    - a. Configuration: **Asymmetrical or hat shaped**].

### 2.4 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.

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1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- B. Isolation Strip at Exterior Walls: Provide[ **one of**] the following:
1. Asphalt-Saturated Organic Felt: ASTM D 226/D 226M, Type I (No. 15 asphalt felt), nonperforated.
  2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, **1/8 inch** thick, in width to suit steel stud size.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754.
1. Gypsum Plaster Assemblies: Also comply with requirements in ASTM C 841 that apply to framing installation.
  2. Portland Cement Plaster Assemblies: Also comply with requirements in ASTM C 1063 that apply to framing installation.
  3. Gypsum Veneer Plaster Assemblies: Also comply with requirements in ASTM C 844 that apply to framing installation.
  4. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.
- C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- D. Install bracing at terminations in assemblies.
- E. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

#### 3.2 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
- B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- C. Install studs so flanges within framing system point in same direction.
- D. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to

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terminate at suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling.

1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
  2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
    - a. Install two studs at each jamb unless otherwise indicated.
    - b. Install cripple studs at head adjacent to each jamb stud, with a minimum **1/2-inch** clearance from jamb stud to allow for installation of control joint in finished assembly.
    - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
  3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
  4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
    - a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
  5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
  6. Curved Partitions:
    - a. Bend track to uniform curve and locate straight lengths so they are tangent to arcs.
    - b. Begin and end each arc with a stud, and space intermediate studs equally along arcs. On straight lengths of no fewer than two studs at ends of arcs, place studs **6 inches** o.c.
- E. Direct Furring:
1. Screw to wood framing.
  2. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced **24 inches** o.c.
- F. Z-Shaped Furring Members:
1. Erect insulation, specified in Section 072100 "Thermal Insulation," vertically and hold in place with Z-shaped furring members spaced **16 inches** o.c.
  2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced **16 inches** o.c.
  3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than **12 inches** from corner and cut insulation to fit.

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- G. Installation Tolerance: Install each framing member so fastening surfaces vary not more than **1/8 inch** from the plane formed by faces of adjacent framing.

### 3.3 INSTALLING SUSPENSION SYSTEMS

- A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
- B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.
- C. Suspend hangers from building structure as follows:
  - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
    - a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
  - 2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
    - a. Size supplemental suspension members and hangers to support ceiling loads within **performance limits established by referenced installation standards.**
  - 3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
  - 4. Flat Hangers: Secure to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.
  - 5. Do not attach hangers to steel roof deck.
  - 6. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
  - 7. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
  - 8. Do not connect or suspend steel framing from ducts, pipes, or conduit.
- D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.
- E. Seismic Bracing: Sway-brace suspension systems **with hangers used for support.**
- F. Installation Tolerances: Install suspension systems that are level to within **1/8 inch in 12 feet** measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 092216

## LOVINGTION FIRE STATION # 2

### SECTION 092900 - GYPSUM BOARD

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Interior gypsum board.
  - 2. Exterior gypsum board for ceilings and soffits.
  - 3. Tile backing panels.
  - 4. Texture finishes.

##### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each texture finish indicated on same backing indicated for Work.

#### PART 2 - PRODUCTS

##### 2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agent.

##### 2.2 GYPSUM BOARD, GENERAL

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

##### 2.3 INTERIOR GYPSUM BOARD

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following
  - a. American Gypsum Co.
  - b. BPB America Inc.
  - c. G-P Gypsum.

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- d. Lafarge North America Inc.
- e. National Gypsum Company.
- f. PABCO Gypsum.
- g. TempleInland.
- h. USG Corporation

B. Gypsum Wallboard: ASTM C 1396/C 1396M.

- 1. Thickness: **5/8 inch**.
- 2. Long Edges: **Tapered**.

C. Gypsum Board, Type X: ASTM C 1396/C 1396M.

- 1. Thickness: **5/8 inch**.
- 2. Long Edges: **Tapered**.

D. Gypsum Ceiling Board: ASTM C 1396/C 1396M.

- 1. Thickness: **5/8 inch**.
- 2. Long Edges: Tapered.

E. Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.

- 1. Core: **5/8 inch Type X**.
- 2. Long Edges: Tapered.
- 3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

### 2.4 SPECIALTY GYPSUM BOARD

A. Gypsum Board, Type C: ASTM C 1396/C 1396M. Manufactured to have increased fire-resistive capability.

- 1. Thickness: As required by fire-resistance-rated assembly indicated on Drawings.
- 2. Long Edges: Tapered.

### 2.5 EXTERIOR GYPSUM BOARD FOR CEILINGS AND SOFFITS

A. Exterior Gypsum Soffit Board: ASTM C 1396/C 1396M, with manufacturer's standard edges.

- 1. Core: **5/8 inch , regular type**.

B. Glass-Mat Gypsum Sheathing Board: ASTM C 1177/C 1177M, with fiberglass mat laminated to both sides and with manufacturer's standard edges.

- 1. Core: **5/8 inch, regular type**.

### 2.6 TILE BACKING PANELS

A. Glass-Mat, Water-Resistant Backing Board: ASTM C 1178/C 1178M, with manufacturer's standard edges.

## LOVINGTION FIRE STATION # 2

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  - a. C-Cure; C-Cure Board 990.
  - b. CertainTeed Corp.; FiberCement BackerBoard.
  - c. Custom Building Products; Wonderboard.
  - d. FinPan, Inc.; Util-A-Crete Concrete Backer Board.
  - e. James Hardie Building Products, Inc.; Hardiebacker.
  - f. National Gypsum Company, Permabase Cement Board.
  - g. USG Corporation; DUROCK Cement Board.
2. Core: 5/8 **inch**, **regular type**.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

B. Cementitious Backer Units: ANSI A118.9 and ASTM C 1288 or ASTM C 1325, with manufacturer's standard edges.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  - a. C-Cure; C-Cure Board 990.
  - b. CertainTeed Corp.; FiberCement BackerBoard.
  - c. Custom Building Products; Wonderboard.
  - d. FinPan, Inc.; Util-A-Crete Concrete Backer Board.
  - e. James Hardie Building Products, Inc.; Hardiebacker.
  - f. National Gypsum Company, Permabase Cement Board.
  - g. USG Corporation; DUROCK Cement Board.
2. Thickness: 5/8 **inch**.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

### 2.7 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: **Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized-steel sheet.**
2. Shapes:
  - a. Cornerbead.
  - b. Bullnose bead.
  - c. LC-Bead: J-shaped; exposed long flange receives joint compound.
  - d. L-Bead: L-shaped; exposed long flange receives joint compound.
  - e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
  - f. Expansion (control) joint.
  - g. Curved-Edge Cornerbead: With notched or flexible flanges.

B. Exterior Trim: ASTM C 1047.

1. Material: **Hot-dip galvanized-steel sheet, plastic, or rolled zinc.**

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2. Shapes:
  - a. Cornerbead.
  - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
  - c. Expansion (Control) Joint: One-piece, rolled zinc with V-shaped slot and removable strip covering slot opening.

### 2.8 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
  1. Interior Gypsum Board: Paper.
  2. Exterior Gypsum Soffit Board: Paper.
  3. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
  4. Tile Backing Panels: As recommended by panel manufacturer.
- C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.
  1. Prefilling: At open joints, **rounded or beveled panel edges**, and damaged surface areas, use setting-type taping compound.
  2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use **setting-type taping drying-type, all-purpose** compound.
    - a. Use setting-type compound for installing paper-faced metal trim accessories.
  3. Fill Coat: For second coat, use **setting-type, sandable topping** compound.
  4. Finish Coat: For third coat, use **setting-type, sandable topping** compound.
  5. Skim Coat: For final coat of Level 5 finish, use **setting-type, sandable topping compound**.
- D. Joint Compound for Exterior Applications:
  1. Exterior Gypsum Soffit Board: Use setting-type taping compound and setting-type, sandable topping compound.
  2. Glass-Mat Gypsum Sheathing Board: As recommended by sheathing board manufacturer.
- E. Joint Compound for Tile Backing Panels:
  1. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.
  2. Cementitious Backer Units: As recommended by backer unit manufacturer.

### 2.9 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.



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- B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
- C. Steel Drill Screws: ASTM C 1002 unless otherwise indicated.
  - 1. Use screws complying with ASTM C 954 for fastening panels to steel members from **0.033 to 0.112 inch** thick.
  - 2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.
- D. Sound-Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
  - 1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
- E. Acoustical Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
- F. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."
- G. Vapor Retarder: As specified in Section 072600 "Vapor Retarders."

### 2.10 TEXTURE FINISHES

- A. Primer: As recommended by textured finish manufacturer.
- B. Polystyrene Aggregate Ceiling Finish: Water-based, job-mixed, polystyrene aggregate finish with flame-spread and smoke-developed indexes of not more than 25 when tested according to ASTM E 84.
  - 1. Texture: **Fine**.
- C. Aggregate Finish: Water-based, job-mixed, aggregated, drying-type texture finish for spray application.
  - 1. Texture: light orange peal.

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### PART 3 - EXECUTION

#### 3.1 APPLYING AND FINISHING PANELS

- A. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
  - B. Comply with ASTM C 840.
  - C. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide **1/4- to 1/2-inch** wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
  - D. For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
  - E. Prefill open joints[, **rounded or beveled edges,**] and damaged surface areas.
  - F. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
  - G. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
    - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
    - 2. Level 2: **Panels that are substrate for tile.**
    - 3. Level 3: None.
    - 4. Level 4: **At panel surfaces that will be exposed to view unless otherwise indicated.**
      - a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."
    - 5. Level 5: All locations not noted above.
      - a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."
  - H. Glass-Mat Gypsum Sheathing Board: Finish according to manufacturer's written instructions for use as exposed soffit board.
  - I. Glass-Mat Faced Panels: Finish according to manufacturer's written instructions.
  - J. Cementitious Backer Units: Finish according to manufacturer's written instructions.
- #### 3.2 APPLYING TEXTURE FINISHES
- A. Surface Preparation and Primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes. Apply primer to surfaces that are clean, dry, and smooth.

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- B. Texture Finish Application: Mix and apply finish using powered spray equipment, to produce a uniform texture **matching approved mockup and** free of starved spots or other evidence of thin application or of application patterns.

### 3.3 PROTECTION

- A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- B. Remove and replace panels that are wet, moisture damaged, and mold damaged.

END OF SECTION 092900

SECTION 093013 – CERAMIC TILING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Glazed wall tile.
2. Metal edge strips.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples:

1. Each type and composition of tile and for each color and finish required.
2. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required.
3. Stone thresholds.

1.3 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Tile and Trim Units: **Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated**

1.4 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installation work shall conform to the standards set forth in the latest version ANSI A108/118 and the TCNA Handbook for Ceramic Tile Installations

B. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockup of **each type of** wall tile installation.

## LOVINGTON FIRE STATION # 2

2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide Standard-grade tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.

#### 2.2 WALL TILE PRODUCTS

- A. Tile Type **CT-1: glazed** ceramic tile. Public restrooms (ROOM # 103 and 104)
  1. Daltile Corporation, Elevare Collection
  2. Certification: Tile certified by the Porcelain Tile Certification Agency.
  3. Face Size: 6" x 18" nominal
  4. Thickness: 5/16"
  5. Dynamic Coefficient of Friction: Not less than 0.42.
  6. Tile Color, Glaze, and Pattern: **As selected by Architect from manufacturer's full range.**
  7. Grout Color: **As selected by Architect from manufacturer's full range.**
  8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable **and matching characteristics of adjoining flat tile.** Provide shapes as follows, selected from manufacturer's standard shapes:
    - a. Wainscot Cap: **Bullnose**, module size 4 by 16.
    - b. External Corners: none
    - c. Internal Corners: Field-buttet square corners. For coved base and cap use angle pieces designed to fit with stretcher shapes.
- B. Tile Type **CT-2: glazed** ceramic tile. (ROOM # 101 behind water fountain)
  1. Daltile Corporation, Elevare Collection
  2. Certification: Tile certified by the Porcelain Tile Certification Agency.
  3. Face Size: 6" x 18" nominal
  4. Thickness: 5/16"
  5. Dynamic Coefficient of Friction: Not less than 0.42.
  6. Tile Color, Glaze, and Pattern: **As selected by Architect from manufacturer's full range.**
  7. Grout Color: **As selected by Architect from manufacturer's full range.**

LOVINGTON FIRE STATION # 2

8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable **and matching characteristics of adjoining flat tile**. Provide shapes as follows, selected from manufacturer's standard shapes:
    - a. Wainscot Cap: **Bullnose**, module size 4 by 16.
    - b. External Corners: none
    - c. Internal Corners: Field-buttet square corners. For coved base and cap use angle pieces designed to fit with stretcher shapes.
- C. Tile Type **CT-3: glazed** ceramic tile. (ROOM # 130,131,132)
1. Daltile Corporation, Elevare Collection
  2. Certification: Tile certified by the Porcelain Tile Certification Agency.
  3. Face Size: 6" x 18" nominal
  4. Thickness: 5/16"
  5. Dynamic Coefficient of Friction: Not less than 0.42.
  6. Tile Color, Glaze, and Pattern: **As selected by Architect from manufacturer's full range.**
  7. Grout Color: **As selected by Architect from manufacturer's full range.**
  8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable **and matching characteristics of adjoining flat tile**. Provide shapes as follows, selected from manufacturer's standard shapes:
    - a. Wainscot Cap: **Bullnose**, module size 4 by 16.
    - b. External Corners: none
    - c. Internal Corners: Field-buttet square corners. For coved base and cap use angle pieces designed to fit with stretcher shapes.
- D. Tile Type **CT-4: glazed** ceramic tile. KITCHEN (ROOM # 121)
1. Daltile Corporation, Elevare Collection
  2. Certification: Tile certified by the Porcelain Tile Certification Agency.
  3. Face Size: 4" x 16" nominal
  4. Thickness: 5/16"
  5. Dynamic Coefficient of Friction: Not less than 0.42.
  6. Tile Color, Glaze, and Pattern: **A As selected by Architect from manufacturer's full range.**
  7. Grout Color: **As selected by Architect from manufacturer's full range.**
  8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable **and matching characteristics of adjoining flat tile**. Provide shapes as follows, selected from manufacturer's standard shapes:
    - a. Wainscot Cap: **Bullnose**, module size 4 by 16.
    - b. External Corners: none
    - c. Internal Corners: Field-buttet square corners. For coved base and cap use angle pieces designed to fit with stretcher shapes.

## LOVINGTON FIRE STATION # 2

### 2.3 SETTING MATERIALS

- A. Comply with pertinent recommendation contained in the latest Tile Council of America "Handbook for Ceramic Tile Installation."
- B. Setting material used will conform to the ANSI 118.4 standard or greater and be recommended by the selected manufacture for the installation and setting for ceramic or porcelain tile based on the application requirements.

### 2.4 GROUT MATERIALS

- A. Sand-Portland Cement Grout: ANSI A108.10, consisting of white or gray cement and white or colored aggregate as required to produce color indicated.
- B. Water-Cleanable Epoxy Grout: ANSI A118.3, **with a VOC content of 65 g/L or less.**

### 2.5 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, Portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic, designed specifically for wall applications; **nickel silver, stainless-steel, ASTM A 666, 300 Series** exposed-edge material.
  - 1. Where tile abuts tile at outside corners of wall tile.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
  - 1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

## LOVINGTON FIRE STATION # 2

### 3.2 PREPARATION

- A. Fill cracks, holes, and depressions in substrates for wall tiles installed with **adhesives or thinset mortar** with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

### 3.3 TILE INSTALLATION

- A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
  - 1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:
    - a. Tile walls in wet areas.
    - b. Tile walls consisting of tiles **8 by 8 inches** or larger.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E. Where accent tile differs in thickness from field tile, vary setting bed thickness so that tiles are flush.
- F. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
- G. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
  - 1. Ceramic Tile: **1/16 inch**. Reference manufacturer's recommendations for specific tile size and pattern.



LOVINGTON FIRE STATION # 2

- H. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
- I. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
  - 1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.

END OF SECTION 093013

SECTION 095123 - ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Acoustical tiles for interior ceilings.
2. Fully concealed, direct-hung, suspension systems.

B. Related Requirements:

1. Section 095113 "Acoustical Panel Ceilings" for ceilings consisting of mineral-base and glass-fiber-base acoustical panels and exposed suspension systems.
2. Section 095133 "Acoustical Metal Pan Ceilings" for ceilings consisting of metal-pan units with exposed and concealed suspension systems.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at **Project site**.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- B. Samples: For each exposed product and for each color and texture specified.

- C. Delegated-Design Submittal: For seismic restraints for ceiling systems.

1. Include design calculations for seismic restraints including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design seismic restraints for ceiling systems.

- B. Seismic Performance: Suspended ceilings shall withstand the effects of earthquake motions determined according to **ASCE/SEI 7**.

- C. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

## LOVINGTON FIRE STATION # 2

1. Flame-Spread Index: Class **A** according to ASTM E 1264.
2. Smoke-Developed Index: **50** or less.

### 2.2 ACOUSTICAL TILES

- A. Acoustical Tile Standard: Manufacturer's standard tiles of configuration indicated that comply with ASTM E 1264.
  1. Armstrong World Industries, Inc. Optima 15/16 - Tegular
- B. Classification: Type XII, Form 2.
- C. Color: **White**.
- D. Light Reflectance (LR): not less than .90.
- E. Ceiling Attenuation Class (CAC): Not less than 26.
- F. Noise Reduction Coefficient (NRC): Not less than .90.
- G. Articulation Class (AC): Not less than 200.
- H. Edge/Joint Detail: 15/16 inch Square Tegular
- I. Thickness: 1 **inch**.
- J. Modular Size: **24 by 24 inches of 24 by 48 As indicated on Drawings.**

### 2.3 METAL SUSPENSION SYSTEM

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
  1. Armstrong World Industries, Inc. Prelude ML 15/16 inch Exposed Tee System at Optima
  2. Color: Blizzard White
- B. Metal Suspension-System Standard: Manufacturer's standard, direct-hung, fully concealed, metal suspension system that complies with applicable requirements in ASTM C 635/C 635M.
- C. Direct-Hung, Double-Web Suspension System: Main and cross runners roll formed from and capped with cold-rolled steel sheet, prepainted, electrolytically zinc coated, or hot-dip galvanized, **G30** coating designation.
  1. Structural Classification: **Intermediate**-duty system.
  2. Access: **Upward**, with initial access openings of size indicated below and located throughout ceiling within each module formed by main and cross runners, with additional access available by progressively removing remaining acoustical tiles.
    - a. Initial Access Opening: In each module, **24 by 24 inches**.

## LOVINGTON FIRE STATION # 2

### 2.4 ACCESSORIES

- A. Attachment Devices: Size for five times the design load indicated in ASTM C 635/C 635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
- B. Seismic Clips: Manufacturer's standard seismic clips designed to secure acoustical tiles in-place during a seismic event.

### 2.5 METAL EDGE MOLDINGS AND TRIM

- A. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations complying with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for of suspension-system runners.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical tiles to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width tiles at borders unless otherwise indicated.
- B. Layout openings for penetrations centered on the penetrating items.

### 3.2 INSTALLATION OF SUSPENDED ACOUSTICAL TILE CEILINGS

- A. Install suspended acoustical tile ceilings according to ASTM C 636/C 636M, **seismic design requirements**, and manufacturer's written instructions.
- B. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical tiles.
  - 1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
  - 2. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- C. Arrange directionally patterned acoustical tiles as indicated on reflected ceiling plans.

END OF SECTION 095123

SECTION 096513 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Resilient base and accessories

1.2 SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified, not less than 12 inches long.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. FloorScore Compliance: Rubber base shall comply with requirements of FloorScore Standards.

2.2 THERMOSET- RUBBER BASE

- A. Manufactures: Subject to compliance with requirements, available manufactures offering products that may incorporated into the Work include, but are not limited to, the following.
  - 1. Armstrong World Industries, Inc.
  - 2. Endura Rubber Flooring; Division of Burke Industries, Inc.
  - 3. Flexco, Inc.
  - 4. Forbo Flooring, Inc.
  - 5. Johnsonite.
  - 6. Roppe Corporation, USA
- B. Product Standard: ASTM F 1861, Type TS rubber, vulcanized thermoset), Group I (solid, homogeneous).
  - 1. Style and Location:
    - a. Style B, Cove: At all locations noted on interior room finish schedule.
- C. Thickness: 0.125 inch (3.2 mm).
- D. Height: 4 inches.

## LOVINGTON FIRE STATION # 2

- E. Lengths: **Coils in manufacturer's standard length.**
- F. Outside Corners: **Job formed or preformed.**
- G. Inside Corners: **Job formed or preformed.**
- H. Colors: **As selected by Architect from full range of industry colors.**

### 2.3 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.
- C. Stair-Tread Nose Filler: Two-part epoxy compound recommended by resilient stair-tread manufacturer to fill nosing substrates that do not conform to tread contours.
- D. Floor Polish: Provide protective, liquid floor-polish products recommended by resilient stair-tread manufacturer.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates for Resilient Stair Accessories: Prepare horizontal surfaces according to ASTM F 710.
  - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
  - 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
  - 3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrate passes test.
  - 4. Moisture Testing: Proceed with installation only after substrates pass testing according to manufacturer's written recommendations, but not less stringent than the following:
    - a. Perform anhydrous calcium chloride test according to ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of **3 lb of water/1000 sq. ft.** in 24 hours.
    - b. Perform relative humidity test using in situ probes according to ASTM F 2170. Proceed with installation only after substrates have maximum **75** percent relative humidity level.

## LOVINGTON FIRE STATION # 2

- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install resilient products until they are the same temperature as the space where they are to be installed.
- E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

### 3.2 RESILIENT BASE INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.
- F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.
- G. Preformed Corners: Install preformed corners before installing straight pieces.
- H. Job-Formed Corners:
  - 1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than **3 inches** in length.
    - a. Form without producing discoloration (whitening) at bends.
  - 2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than **3 inches** in length.
    - a. **Miter or cope** corners to minimize open joints.

### 3.3 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Stair Accessories:
  - 1. Use stair-tread-nose filler to fill nosing substrates that do not conform to tread contours.
  - 2. Tightly adhere to substrates throughout length of each piece.

## LOVINGTON FIRE STATION # 2

3. For treads installed as separate, equal-length units, install to produce a flush joint between units.
- C. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

### 3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- B. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 096513



SECTION 096516 - RESILIENT SHEET FLOORING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes **rubber** sheet flooring.

1.2 SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified in manufacturer's standard size, but not less than **6-by-9-inch** sections.
  - 1. For heat-welding bead, manufacturer's standard-size Samples, but not less than **9 inches** long, of each color required.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For resilient sheet flooring, as determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
  - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.2 UNBACKED RUBBER SHEET FLOORING IN FITNESS ROOM

- A. Basis of Design Product: Subject to compliance with requirements, provide Elements, AMARCO (American Mat & Rubber Company) or comparable product from other manufactures.
- B. Material: Recycled/ SBR rubber
- C. Product Standard: ASTM F 1913
  - 1. Type: Recycled/ SBR rubber.
  - 2. Thickness: 8mm.
- D. Wearing Surface: **Smooth**.
- E. Sheet Width: **As standard with manufacturer**
- F. Seamless-Installation Method: **Chemically bonded**.

- G. Colors and Patterns: **As selected by Architect from full range of industry colors.**

## 2.3 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by resilient sheet flooring manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by flooring and adhesive manufacturers to suit resilient sheet flooring and substrate conditions indicated.
1. Adhesives shall have a VOC content of 50 g/L or less
- C. Seamless-Installation Accessories:
1. Chemical-Bonding Compound: Manufacturer's product for chemically bonding seams.
- D. Floor Polish: Provide protective, liquid floor-polish products recommended by resilient sheet flooring manufacturer.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Prepare substrates according to resilient sheet flooring manufacturer's written instructions to ensure adhesion of resilient sheet flooring.
- B. Concrete Substrates: Prepare according to ASTM F 710.
1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
  2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by resilient sheet flooring manufacturer. Do not use solvents.
  3. Alkalinity and Adhesion Testing: Perform tests recommended by resilient sheet flooring manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than **9** pH.
  4. Moisture Testing: Proceed with installation only after substrates pass testing according to resilient sheet flooring manufacturer's written recommendations, but not less stringent than the following:
    - a. Perform anhydrous calcium chloride test according to ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of **3 lb of water/1000 sq. ft.** in 24 hours.
    - b. Perform relative humidity test using in situ probes according to ASTM F 2170. Proceed with installation only after substrates have a maximum **75** percent relative humidity level.

## LOVINGTON FIRE STATION # 2

- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install resilient sheet flooring until it is the same temperature as the space where it is to be installed.
- E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient sheet flooring.

### 3.2 RESILIENT SHEET FLOORING INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient sheet flooring.
- B. Unroll resilient sheet flooring and allow it to stabilize before cutting and fitting.
- C. Lay out resilient sheet flooring as follows:
  - 1. Maintain uniformity of flooring direction.
  - 2. Minimize number of seams; place seams in inconspicuous and low-traffic areas, at least **6 inches** away from parallel joints in flooring substrates.
  - 3. Match edges of flooring for color shading at seams.
  - 4. Avoid cross seams.
- D. Scribe and cut resilient sheet flooring to butt neatly and tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, and door frames.
- E. Extend resilient sheet flooring into toe spaces, door reveals, closets, and similar openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on resilient sheet flooring as marked on substrates. Use chalk or other nonpermanent marking device.
- G. Install resilient sheet flooring on covers for telephone and electrical ducts and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of flooring installed on covers and adjoining flooring. Tightly adhere flooring edges to substrates that abut covers and to cover perimeters.
- H. Adhere resilient sheet flooring to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- I. Seamless Installation:
  - 1. Chemically Bonded Seams: Bond seams with chemical-bonding compound to permanently fuse sections into a seamless flooring. Prepare seams and apply compound to produce tightly fitted seams without gaps, overlays, or excess bonding compound on flooring surfaces.

LOVINGTON FIRE STATION # 2

3.3 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient sheet flooring.
- B. Cover resilient sheet flooring until Substantial Completion.

END OF SECTION 096516

## LOVINGTON FIRE STATION #2

### SECTION 096519 – VINYL FLOORING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Provide resilient tile flooring, resilient wall base, and accessories as shown on the Drawings, as specified herein and as needed for a complete and proper installation.

##### 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: In manufacturer's standard size, but not less than 6-by-6-inch (150-by-150-mm) sections of each different color and pattern of floor covering required.
- C. Maintenance data.

##### 1.3 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
  - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

##### 1.4 PROJECT CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer in spaces to receive floor coverings.
- B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer.
- C. Close spaces to traffic during floor covering installation.
- D. Close spaces to traffic for 24 hours after floor covering installation. No maintenance procedures should take place for a minimum of 72 hours. Follow the Manufacturer's recommendation for emergency conditions that require the movement of equipment or furniture.
- E. Install floor coverings after other finishing operations, including painting, have been completed.

## LOVINGTON FIRE STATION #2

### PART 2 - PRODUCTS

#### 2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include the following:
  - 1. TAJ Flooring, Inc. – Elgin, IL; 888-652-2111
  - 2. Other manufacturers as submitted an approved in accordance with Section 016200 “Product Options”.
    - a. The Architect reserves the right to reject proposed substitutions on basis of color and pattern compatibility even when fabrication and materials are equivalent.

#### 2.2 VINYL PLANK FLOORING

- A. Vinyl Floor Planks: Phthalate Free LVT, “Imperial” as manufactured by TAJ Flooring.
- B. Size: As follows and as indicated on Drawings.
  - 1. 6” x 36” Nominal
- C. Color: As per the following list.
  - 1. TAJ IMPERIAL – TAJ-663H-PF TAUPE.
    - a. Located in Rooms: Dayroom 119, Dining 120, Kitchen 121, and Hall 129.
  - 2. TAJ IMPERIAL – TAJ-664H-PF CADET.
    - a. Located in Rooms: Dorm 122, Dorm 123, Dorm 124, Dorm 126, Dorm 127, and Dorm 128.
- D. Classification: ASTM F1700 Class III, Type B.
- E. Overall Thickness: 3.0mm, .118”, Nominal 1/8”
- F. Wear Layer Thickness: .05mm, 20 mil.
- G. Wear Layer: High Molecular Weight Polymerized Vinyl.
- H. Finish: Protech plus ceramic bead infused, EPA approved anti-bacterial, anti-fungal, UV cured urethane coating technology.
- I. Chemical/Stain Resistance: ASTM F925, No surface dulling, surface attack or color change with 5% acetic acid, 70% isopropyl alcohol, mineral spirits, 5% sodium hydroxide, 5% hydrochloric acid, 5% ammonia, bleach, 5% phenol, gasoline, sulfuric acid, kerosene, and olive oil.

## LOVINGTON FIRE STATION #2

- J. Slip Resistance: ASTM C1028-89, >0.6 per ADA
- K. Flame Spread: ASTM E648, >.45, Class 1
- L. Smoke Density: ASTM E662, <450
- M. Static Load: ASTM F970, 1100 psi
- N. Indoor Air Quality: CHPD 1350 Certified

### 2.3 VINYL SHEET FLOORING

- A. Vinyl Floor Sheet: Phthalate Free LVT, “Majestic” as manufactured by TAJ Flooring.
- B. Size: As follows and as indicated on Drawings.
  - 1. 6’-0”x65’-6” roll
- C. Color: As per the following list.
  - 1. TAJ MAJESTIC – TAJ-252 LIGHTHOUSE.
    - a. Located in Rooms: Bath 130, Bath 131, Bath 132, Comm. Rm. 133, and Utility 134.
- D. Classification: ASTM F1303, Type 1, Grade 1, Backing Class B.
- E. Overall Thickness: 2.0mm, .080”
- F. Wear Layer Thickness: .05mm, 20 mil.
- G. Wear Layer: High Molecular Weight Polymerized Vinyl.
- H. Finish: Protech plus ceramic bead infused, EPA approved anti-bacterial, anti-fungal, UV cured urethane coating technology.
- I. Chemical/Stain Resistance: ASTM F925, No surface dulling, surface attack or color change with 5% acetic acid, 70% isopropyl alcohol, mineral spirits, 5% sodium hydroxide, 5% hydrochloric acid, 5% ammonia, bleach, 5% phenol, gasoline, sulfuric acid, kerosene, and olive oil.
- J. Slip Resistance: ASTM C1028-89, >0.6 DIN 51130:2014, R10 Exceeds ADA Requirements.
- K. Flame Spread: ASTM E648, >.45, Class 1
- L. Smoke Density: ASTM E662, <450, Flaming/Non Flaming
- M. Static Load: ASTM F970, 1100 psi
- N. Indoor Air Quality: CHPD 1350 Certified

## LOVINGTON FIRE STATION #2

### 2.4 RESILIENT MOLDING ACCESSORY

- A. Description: Reducer strip for resilient floor covering and carpet. For transitions not indicated, install appropriate products per manufacturer's recommendation.
- B. Profile and Dimensions: Subject to compliance with manufacturer's recommendations.

### 2.5 INSTALLATION MATERIALS

- A. Inspect subfloor surfaces carefully to determine acceptability per manufacturer's instructions. Provide Trowelable Leveling and Patching Compounds per manufacturer's recommendations.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit products and substrate conditions indicated.
  - 1. Adhesives shall have a VOC content of not more than 50 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24) or per manufacturer's recommendation.
- C. Welding Rods: Manufacturer's standard for sealing joints, color to match resilient flooring. Follow Manufacturer's recommendations for
- D. Top Shield: Apply manufacturer's standard sealing product.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of floor coverings.
- B. Concrete Substrates: Prepare according to ASTM F 710.
  - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
  - 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
  - 3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
  - 4. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
    - a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
    - b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.



## LOVINGTON FIRE STATION #2

- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install floor coverings until they are same temperature as space where they are to be installed.
  - 1. Move floor coverings and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- E. Sweep and vacuum clean substrates to be covered by floor coverings immediately before installation.

### 3.2 FLOOR PLANK/SHEET INSTALLATION

- A. Comply with manufacturer's written instructions for installing product.
- B. Lay out product from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
  - 1. Lay planks/sheets square with room axis.
- C. Match product for color and pattern. Discard broken, cracked, chipped, or deformed tiles.
  - 1. Lay planks/sheets with grain running in one direction.
- D. Scribe, cut, and fit product to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend floor planks/sheets into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, non-staining marking device.
- G. Adhere products to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

### 3.3 RESILIENT BASE INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

## LOVINGTON FIRE STATION #2

- D. Adhere resilient base tightly to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.

### 3.4 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of carpet or resilient floor covering that would otherwise be exposed.

### 3.5 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protection of floor coverings.
- B. Floor Polish/Wax: Remove soil, visible adhesive, and surface blemishes from floor coverings before applying liquid floor polish per manufacturer's recommendations.
  - 1. Apply number of polish or wax coat(s) recommended by product manufacturer.
- C. Cover floor coverings until Substantial Completion.

### 3.6 EXTRA MATERIALS

- A. Provide in accordance with Section 017700 "Closeout Procedures"

3% extra material or one box for each 50 boxes for each type, color, pattern, and size installed.

END OF SECTION

## LOVINGTON FIRE STATION # 2

### SECTION 096813 - TILE CARPETING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes modular carpet tile.

##### 1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at.

##### 1.3 SUBMITTALS

- A. Product Data: For each type of product.
- B. Sustainable Design Submittals:
- C. Shop Drawings: For carpet tile installation, plans showing the following:
  - 1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
  - 2. Carpet tile type, color, and dye lot.
  - 3. Type of subfloor.
  - 4. Type of installation.
  - 5. Pattern of installation.
  - 6. Pattern type, location, and direction.
  - 7. Pile direction.
  - 8. Type, color, and location of insets and borders.
  - 9. Type, color, and location of edge, transition, and other accessory strips.
  - 10. Transition details to other flooring materials.
- D. Samples: For each exposed product and for each color and texture required.
- E. Product test reports.
- F. Sample warranty.
- G. Maintenance data.

##### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Certified by the International Certified Floorcovering Installers Association at the **Commercial II** certification level.

## LOVINGTON FIRE STATION # 2

### 1.5 WARRANTY

- A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: **10** years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 CARPET TILE

- A. Basis-of-Design: Provide InterfaceFLOR or comparable product form other manufactures
- B. Color: **As selected by Architect from manufacturer's full range.**
- C. Pattern: Route 66 (for purpose of BID) Architect to select pattern form manufacture's full range
- D. Fiber Content: **100 percent nylon 6, 6.**
- E. Fiber Type: Tufted, textured loop construction and tufted cut pile..
- F. Primary Backing/Backcoating: GlasBac RE Tile and GlasBac Tile
- G. Size: **20 by 20 inches.**
- H. Applied Treatments:
  - 1. Soil-Resistance Treatment: Protekt.
  - 2. Antimicrobial Treatment: "Intersept" that protects carpet tiles as follows:
    - a. Antimicrobial Activity: Not less than 2-mm halo of inhibition for gram-positive bacteria, not less than 1-mm halo of inhibition for gram-negative bacteria, and no fungal growth, according to AATCC 174.

### 2.2 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.

## LOVINGTON FIRE STATION # 2

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

##### A. Concrete Slabs:

1. Moisture Testing: Perform tests so that each test area does not exceed **200 sq. ft.**, and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
  - a. Anhydrous Calcium Chloride Test: ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of **3 lb of water/1000 sq. ft.** in 24 hours.
  - b. Relative Humidity Test: Using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum **75** percent relative humidity level measurement.
  - c. Perform additional moisture tests recommended in writing by adhesive and carpet tile manufacturers. Proceed with installation only after substrates pass testing.

#### 3.2 PREPARATION

- A. General: Comply with CRI's "CRI Carpet Installation Standards" and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions **1/8 inch** wide or wider, and protrusions more than **1/32 inch** unless more stringent requirements are required by manufacturer's written instructions.
- C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.
- D. Metal Substrates: Clean grease, oil, soil and rust, and prime if recommended in writing by adhesive manufacturer. Rough sand painted metal surfaces and remove loose paint. Sand aluminum surfaces, to remove metal oxides, immediately before applying adhesive.
- E. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

#### 3.3 INSTALLATION

- A. General: Comply with CRI's "CRI Carpet Installation Standard," Section 18, "Modular Carpet" and with carpet tile manufacturer's written installation instructions.
- B. Installation Method: [**As recommended in writing by carpet tile manufacturer**] [**Glue down; install every tile with full-spread, releasable, pressure-sensitive adhesive**] [**Partial glue**]

LOVINGTON FIRE STATION # 2

**down; install periodic tiles with releasable, pressure-sensitive adhesive] [Free lay; install carpet tiles without adhesive].**

- C. Maintain dye-lot integrity. Do not mix dye lots in same area.
- D. Maintain pile-direction patterns [**indicated on Drawings**] [**recommended in writing by carpet tile manufacturer**].
- E. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- F. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.
- H. Install pattern parallel to walls and borders.
- I. Access Flooring: Stagger joints of carpet tiles so carpet tile grid is offset from access flooring panel grid. Do not fill seams of access flooring panels with carpet adhesive; keep seams free of adhesive.
- J. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 096813

SECTION 099113 - EXTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes surface preparation and the application of paint systems on **exterior substrates**.
  - 1. Concrete
  - 2. Steel and iron.

1.2 DEFINITIONS

- A. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- C. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- D. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- E. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- F. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
  - 1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
- B. Sustainable Design Submittals:
- C. Samples: For each type of paint system and each color and gloss of topcoat.

1.4 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

## LOVINGTON FIRE STATION # 2

1. Architect will select one surface to represent surfaces and conditions for application of each paint system.
  - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
  - b. Other Items: Architect will designate items or areas required.
2. Final approval of color selections will be based on mockups.
  - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

### PART 2 - PRODUCTS

#### 2.1 PAINT, GENERAL

- A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."
- B. Material Compatibility:
  1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
- C. Colors: **As selected by Architect from manufacturer's full range.**

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
  1. Concrete: 12 percent.
  2. Fiber-Cement Board: 12 percent.
  3. Masonry (Clay and CMUs): 12 percent.
  4. Wood: 15 percent.
  5. Portland Cement Plaster: 12 percent.
  6. Gypsum Board: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.



## LOVINGTON FIRE STATION # 2

- D. Proceed with coating application only after unsatisfactory conditions have been corrected.
  - 1. Application of coating indicates acceptance of surfaces and conditions.

### 3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
  - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

### 3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual."
- B. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

### 3.4 CLEANING AND PROTECTION

- A. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- B. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

### 3.5 EXTERIOR PAINTING SCHEDULE

- A. Concrete Substrates, Traffic Surfaces:
  - 1. Alkyd Floor Enamel System **MPI EXT 3.2D**:
    - a. Prime Coat: Floor enamel, matching topcoat.
    - b. Intermediate Coat: Floor enamel, matching topcoat.
    - c. Topcoat: Floor enamel, alkyd, gloss (MPI Gloss Level 6)[, **MPI #27**].
    - d. Additive: Manufacturer's standard additive to increase skid resistance of painted surface.

LOVINGTON FIRE STATION # 2

B. Steel Substrates:

1. Quick-Drying Enamel System: MPI EXT 5.1A. Gloss Level 5.
  - a. Prime Coat: Quick-drying alkyd metal primer.
  - b. Intermediate Coat: Quick-drying enamel matching topcoat.
  - c. Topcoat: Quick-drying enamel (semigloss).

C. Galvanized-Metal Substrates:

1. Latex System: MPI EXT 5.3H. Gloss Level 5.
  - a. Prime Coat: Waterborne galvanized-metal primer.
  - b. Intermediate Coat: Exterior alkyd enamel matching topcoat.
  - c. Topcoat: Exterior alkyd enamel (semigloss).

END OF SECTION 099113

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes surface preparation and the application of paint systems on **Interior substrates**.
  - 1. Steel .
  - 2. Galvanized metal.
  - 3. Gypsum board.

1.2 DEFINITIONS

- A. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. MPI Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- C. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- D. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- E. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- F. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- G. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
  - 1. Include Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
- B. Samples: For each type of paint system and in each color and gloss of topcoat.

## LOVINGTON FIRE STATION # 2

### 1.4 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
  - 1. Architect will select one surface to represent surfaces and conditions for application of each paint system.
    - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft.
    - b. Other Items: Architect will designate items or areas required.
  - 2. Final approval of color selections will be based on mockups.
    - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

## PART 2 - PRODUCTS

### 2.1 PAINT, GENERAL

- A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."
- B. Material Compatibility:
  - 1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  - 2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
- C. Colors: **As selected by Architect from manufacturer's full range.**

## PART 3 - EXECUTION

### 3.1 PRIMERS/SEALERS

- A. Interior Latex Primer/Sealer: MPI #50.
- B. Base Coat: United States Gypsum, Product "First Coat", or equal.

### 3.2 METAL PRIMERS

- A. Rust Inhibitive Latex Metal Primer: MPI #107.
- B. Waterborne Galvanized-Metal Primer: MPI #134.

## LOVINGTON FIRE STATION # 2

### 3.3 WOOD PRIMERS

- A. Interior Latex-Based Wood Primer: MPI #39.

### 3.4 SOLVENT-BASED COATINGS

- A. Alkyd Varnish, Interior, Semi-Gloss (Gloss Level 5): MPI #74.

### 3.5 LATEX PAINTS

- A. Interior Latex (Satin): MPI #43 (Gloss Level 3).
- B. Interior Latex (Semigloss): MPI #54 (Gloss Level 5).
- C. Interior Latex Fire Retardant: MPI #64

### 3.6 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
  - 1. Concrete: 12 percent.
  - 2. Fiber-Cement Board: 12 percent.
  - 3. Masonry (Clay and CMUs): 12 percent.
  - 4. Wood: 15 percent.
  - 5. Gypsum Board: 12 percent.
  - 6. Plaster: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Proceed with coating application only after unsatisfactory conditions have been corrected.
  - 1. Application of coating indicates acceptance of surfaces and conditions.

### 3.7 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

## LOVINGTON FIRE STATION # 2

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

### 3.8 APPLICATION

- A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."
- B. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- C. Painting Mechanical and Electrical Work: Paint items exposed in equipment rooms and occupied spaces including, but not limited to, the following:
  1. Mechanical Work:
    - a. Uninsulated metal piping.
    - b. Uninsulated plastic piping.
    - c. Pipe hangers and supports.
    - d. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
    - e. Mechanical equipment that is indicated to have a factory-primed finish for field painting.
  2. Electrical Work:
    - a. Switchgear.
    - b. Panelboards.
    - c. Electrical equipment that is indicated to have a factory-primed finish for field painting.
    - d. Telephone Backer Panels.
- D. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- E. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

### 3.9 INTERIOR PAINTING SCHEDULE

- A. Steel Substrates:
  1. Quick-Drying Latex Enamel System: MPI INT 5.1B. Gloss Level 5
    - a. Prime Coat: Rust Inhibitive Water Based primer.
    - b. Intermediate Coat: W.B. Light Industrial Coating.
    - c. Topcoat: W.B. Light Industrial Coating.

## LOVINGTON FIRE STATION # 2

### B. Galvanized-Metal Substrates:

1. Latex over Waterborne Primer System: MPI INT 5.3J. Gloss Level 5
  - a. Prime Coat: Waterborne galvanized-metal primer.
  - b. Intermediate Coat: Interior latex matching topcoat.
  - c. Topcoat: Interior latex.

### C. **Gypsum Board** Substrates:

1. Latex System: MPI INT 9.2A. Gloss Level 3
  - a. Base Coat: KWAL 0873, Dunn Edwards Vinylastic (W101), USG First Coat.
  - b. Prime Coat: Interior latex primer/sealer.
  - c. Intermediate Coat: Interior latex matching topcoat.
  - d. Topcoat: Interior latex (Satin).
2. Latex System: MPI INT 9.2A. Gloss Level 5
  - a. Prime Coat: Interior latex primer/sealer.
  - b. Intermediate Coat: Interior latex matching topcoat.
  - c. Top Coat: Interior latex topcoat. (Semigloss).

Note: Substrates not listed are subject to architectural review to determine the MPI standard during the submittal process.

END OF SECTION 099123

SECTION 101419 - DIMENSIONAL LETTER SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Plaques
  - 2. Dimensional Characters
  - 3. Oversized dimensional characters
  - 4. Interior Signs.

1.2 DEFINITIONS

- A. ADA-ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines."

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For dimensional letter signs.
  - 1. Include fabrication and installation details and attachments to other work.
  - 2. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
  - 3. Show message list, typestyles, graphic elements, and layout for each sign.
  - 4. Show locations of electrical service connections.
  - 5. Include diagrams for power, signal, and control wiring.
- C. Samples: For each exposed product and for each color and texture specified.
- D. Sign Schedule: Use same designations specified or indicated on Drawings or in a sign schedule.

1.4 WARRANTY

- A. Provide written documentation of manufacturer's warranty.
- B. Warranty must guarantee interior signs for the life of the building.



## LOVINGTON FIRE STATION # 2

### PART 2 - PRODUCTS

#### 2.1 PLAQUES

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following;
1. Advance Corporation; Braille-Tac Division.
  2. A. R. K. Ramos.
  3. Gemini Incorporated.
  4. Matthews International Corporation; Bronze Division.
  5. Metal Arts; Div. of L&H Mfg. Co.
  6. Mills Manufacturing Company.
  7. Nelson-Harkins Industries.
  8. Southwell Company (The).
- B. Cast Plaques: Provide castings free of pits, scale, sand holes, and other defects, as follows;
1. Plaque Material: Bronze.
  2. Background Texture: Manufacturer's standard stipple texture.
  3. Border Style: Projected bevel.
  4. Mounting: Concealed studs, non-corroding for substrates encountered.
  5. Design: City of Lovington Standards and approved by the Architect and Owner

#### 2.2 DIMENSIONAL CHARACTERS

- A. Location and Lettering to be provided by City of Lovington. City of Lovington to determine the extent and location of final building lettering.
- B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following;
1. ACE Sign Systems, Inc.
  2. Advance Corporation; Braille-Tac Division.
  3. A. R. K. Ramos.
  4. ASI-Modulex, Inc.
  5. Bunting Graphics, Inc.
  6. Gemini Incorporated.
  7. Metal Arts; Div. of L&H Mfg. Co.
  8. Mills Manufacturing Company.
  9. Mohawk Sign Systems.
  10. Nelson-Harkins Industries.
  11. Signature Signs, Incorporated.
  12. Southwell Company (The).
- C. Cast Characters: Produce characters with smooth flat faces, sharp corners, and precisely formed lines and profiles, free of pits, scale, sand holes, and other defects. Cast lugs into back of characters and tap to receive threaded mounting studs. Alloy and temper recommended by sign

## LOVINGTON FIRE STATION # 2

manufacturer for casting process used and for use and finish indicated. Comply with the following requirements.

1. Character Material: Aluminum.
2. Size: Twelve inches.
3. Font: Ribbon Deep
4. Color(s): Anodized.
5. Mounting: Concealed studs, non-corroding for substrates encountered.

### 2.3 DIMENSIONAL CHARACTERS (OVERSIZED # 2)

- A. Subject to compliance with requirements, provide products manufactured by A.R.K. Ramos Architectural Signage Systems, Oklahoma City Oklahoma, Toll Free 1-800-725-7266, Fax 405-232-8516
- B. Cast Characters: Form letters by sand casting. Produce characters with smooth flat faces, sharp corners, precisely formed lines and profiles, free from pits, scale, sand holes and other defects. Cast anchoring devices into individual letters as required for anchorage.
- C. CHARACTERISTIC
  1. Metal: Aluminum
  2. Size: 8 ft
  3. Letterstyle Architectural Prismatic
  4. Finish Clear Anodized
  5. Mounting \_PM-2
  6. Text 2

### 2.4 INTERIOR SIGNAGE

- A. Manufacturers
  1. Acceptable Manufacturer: Century Sign Builders, which is located at 2117 Commercial NE: Albuquerque, NM 87106, (505) 888-2901 or other providing equal Basis-of-Design Product as approved by Architect.
- B. Basis-of-Design Product: Subject to compliance with requirements, provide Diversity Sign System or a comparable product as approved by Architect.
  1. General Characteristics
    - a. Regulatory Compliance: All signs shall conform to the requirements of regulations list in section 1.3 and shall be designed to meet the stated requirements for color, contrast, letter height, install location and other characteristics required for accessibility and by local, state and federal regulations.
    - b. Base material or chassis: Curved aluminum sign frame
      - i. Extruded aluminum sign frame consisting of a convex curved face, side channels and (2) end caps such that that the lens) with tactile lettering/graphics, changeable insert and printed graphic insert are held and contained within the sign frame.

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- ii. Overall size and depth/curvature of sign frame as per approved shop drawings.
- iii. Finishes for aluminum frame and end caps as per approved shop drawings
- c. Lens or cover material: lens and covers shall be constructed using 0.125" (342-101) or 0.0625" (322-101) clear single-ply non-glare acrylic multi-polymer (Rowmark).
- d. Changeable message insert will be fabricated from commonly available transparency media no less than 5 mil thick that is compatible with inkjet or laser printers such as 3M CG3710 or equivalent.
- e. Printed graphic inserts: Printed inserts will be created using a satin-coated, tear-resistant, rigid PVC media with eco-solvent waterfast & UV stable inks.
  - i. Printed background inserts must be manufactured in color managed workflow with the following capacities:
    - ii. All printing must be done using a profiled printer with transmissible ICC profile.
    - iii. All approved colors used in final design must have LAB values recorded and submitted to architect owner for future reference and duplication.
    - iv. Printing must be performed on calibrated printer such that future orders of insert can be reproduced within 5 Delta E of recorded LAB values.
- f. Tactile Raised Lettering/Graphic method: Tactile lettering and symbols shall be formed using rotary engraving method and bonded to sign plaque using 3M Scotch 467HP adhesive. Text, numbers and symbols must have 1/32" return cut to 22 degree angle. Text, numbers and symbols must be constructed with materials having embedded coloration that is the final approved color for the signs. Products with painted or otherwise applied coloration method are not acceptable.
- g. Braille Method: Braille must be constructed using the Edgerton Grade 2 Braille System using clear Raster beads.
- h. Vinyl Graphics: As indicated on the shop drawings, signs may have text, graphics or decorative elements created using applied vinyl graphics film. Such graphics shall:
  - i. Be constructed on high performance cast vinyl graphic film products such as 3M Scotchcal or equal with a 5 year or greater warranty.
  - ii. Signs shall be cut from sufficiently large rolls of material to minimize seams or joining of material to create one sign.
  - iii. All lettering and graphics shall be computer cut from professionally quality artwork. No hand cut vinyl film shall be installed.
  - iv. Signs shall be installed free of bubbles, wrinkles or other anomalies.
- i. Other features:
  - i. Signs may be configured in one, two or three sided configurations for various applications as wall mounted, suspended, flag mounted or free standing as per the approved shop drawings.
- j. Installation method:

## LOVINGTON FIRE STATION # 2

- i. Wall mounted signs: signs shall be mounted using double-sided vinyl foam tape (1/16" thickness), silicon adhesive or mechanical anchors as per the approved shop drawings.
- ii. Flag mount hardware: provide custom mounting bracket for flag mounted signs as indicated on shop drawings.
- iii. Wall mount hardware: provide custom mounting hardware for wall mounted signs as indicated on shop drawings.
- iv. Suspended mount hardware: provide custom mounting hardware for ceiling suspended mounted signs as indicated on shop drawings.
- v. Free standing hardware: provide base plate and floor fasteners (optional) for free standing signs as indicated on the shop drawings.
- vi. Cubicle mounted hardware: provide removable mounting method for mounting sign at cubicles, workstations or systems furniture partitions as indicated on the shop drawings.
- vii. Work surface hardware: provide angle bottom flange or stand to allow signs to be displayed in a vertical (slightly angled) fashion when placed on transaction counters, desks, etc. as indicated on the shop drawings.

### 2. Color Selections

- a. Tactile lettering/graphics: As per approved shop drawings
- b. Graphic insert: As per approved shop drawings
- c. Changeable insert: As per approved shop drawings
- d. Frame and mounting hardware: As per approved shop drawings

### 3. Font Selections

- a. Tactile lettering: As per approved shop drawings
- b. Graphic insert lettering: As per approved shop drawings
- c. Changeable insert lettering: As per approved shop drawings

## 2.5 FABRICATION

### A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

1. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
2. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
4. Internally brace signs for stability and for securing fasteners.

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5. Provide rebates, lugs, and brackets necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.
  6. Castings: Fabricate castings free of warp, cracks, blowholes, pits, scale, sand holes, and other defects that impair appearance or strength. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks before finishing.
- B. Brackets: Fabricate brackets, fittings, and hardware for bracket-mounted signs to suit sign construction and mounting conditions indicated. Modify manufacturer's standard brackets as required.
1. Aluminum Brackets: Factory finish brackets with baked-enamel or powder-coat finish [**to match sign-background** color unless otherwise indicated.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
  2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
  3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
- B. Mounting Methods:
1. Concealed Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
    - a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place sign in position and push until flush to surface, embedding studs in holes. Temporarily support sign in position until adhesive fully sets.
    - b. Thin or Hollow Surfaces: Place sign in position and flush to surface, install washers and nuts on studs projecting through opposite side of surface, and tighten.
  2. Projecting Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
    - a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place spacers on studs, place sign in position, and push until spacers are pinched between sign and substrate, embedding the stud ends in holes. Temporarily support sign in position until adhesive fully sets.

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- b. Thin or Hollow Surfaces: Place spacers on studs, place sign in position with spacers pinched between sign and substrate, and install washers and nuts on stud ends projecting through opposite side of surface, and tighten.
  3. Through Fasteners: Drill holes in substrate using predrilled holes in sign as template. Countersink holes in sign if required. Place sign in position and flush to surface. Install through fasteners and tighten.
  4. Back Bar and Brackets: Remove loose debris from substrate surface and install backbar or bracket supports in position so that signage is correctly located and aligned.
  5. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility of cured adhesive at sign edges. Place sign in position, and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.
- C. Remove temporary protective coverings and strippable films as signs are installed.

END OF SECTION 101419

SECTION 102600 - WALL AND DOOR PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Corner guards.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified, **12 inches**.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Surface Burning Characteristics: Comply with ASTM E 84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Flame-Spread Index: 25 or less.
  - 2. Smoke-Developed Index: 450 or less.

2.2 CORNER GUARDS

- A. Stainless steel corner guards.
  - 1. Architectural grade (16 ga) stainless #4 brushed satin vertical finish in 90 degree.
  - 2. Pre-drilled holes for Philips head screws
  - 3. 2 inch by 2 inch by 48 inches. 16 gauge

2.3 MATERIALS

- A. Fasteners: Aluminum, nonmagnetic stainless-steel, or other noncorrosive metal screws, bolts, and other fasteners compatible with items being fastened. Use security-type fasteners where exposed to view.
- B. Adhesive: As recommended by protection product manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Installation Quality: Install wall and door protection according to manufacturer's written instructions, level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.
- B. Mounting Heights: Install wall and door protection in locations and at mounting heights indicated on Drawings.
- C. Accessories: Provide splices, mounting hardware, anchors, trim, joint moldings, and other accessories required for a complete installation.
  - 1. Provide anchoring devices and suitable locations to withstand imposed loads.
  - 2. Where splices occur in horizontal runs of more than **20 feet**, splice aluminum retainers and plastic covers at different locations along the run, but no closer than **12 inches** apart.

END OF SECTION 102600



## LOVINGTON FIRE STATION # 2

### SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Public-use washroom accessories.
2. Public-use shower room accessories.
- ~~3. Private-use bathroom accessories.~~
- ~~4. Healthcare accessories.~~
- ~~5. Warm-air dryers.~~
- ~~6. Childcare accessories.~~
7. Underlavatory guards.
8. Custodial accessories.

- B. Owner-Furnished Material: Soap dispensers, paper towel dispensers, napkin vending dispensers, and toilet paper dispensers.

##### 1.2 SUBMITTALS

- A. Product Data: For each type of product.

#### PART 2 - PRODUCTS

##### 2.1 PERFORMANCE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

##### 2.2 PUBLIC-USE RESTROOMS AND FIRE STATION BATHROOM ACCESSORIES

###### A. MANUFACTURES

- B. Basis-of-Design Product: The design for accessories is based on products indicated. Subject to compliance with requirements, provide the named product or a comparable product by one of the following:

1. A & J Washroom Accessories, Inc.
2. American Specialties, Inc.
3. Bobrick Washroom Equipment, Inc.
4. General Accessory Manufacturing Co. (GAMCO)
5. Nexel Industries

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- C. Toilet Paper dispenser (Owner Provided Contractor installed)
- D. Paper Towel dispenser ( Owner Provided Contractor installed)
- E. Waste Receptacle (Owner Provided)
- F. Liquid-Soap Dispenser (Owner Provided Contractor installed)
- G. Sanitary-Napkin Disposal Unit : (Owner Provided Contractor installed)
- H. Grab bar:
  - 1. Basis-of-Design Product: Bradley 812 by 36", 42" and 18".
  - 2. Mounting: Flanges with concealed fasteners.
  - 3. Material: Stainless steel, 0.05 inch (1.2 mm) thick.
    - a. Finish: Smooth, No. 4, satin finish.
  - 4. Outside Diameter: 1-1/2 inches (38 mm).
- I. Mirror Unit:
  - 1. Basis-of-Design Product: Bradley 780.
  - 2. Frame: Stainless-steel angle, 0.05 inch (1.3 mm) thick.
    - a. Corners: Manufacturer's standard.
  - 3. Hangers: Produce rigid, tamper- and theft-resistant installation, using method indicated below.
    - a. One-piece, galvanized steel, wall-hanger device with spring-action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
    - b. Wall bracket of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.
  - 4. Size: As indicated on Drawings.
- J. Coat Hook: (PROVIDE ONE PER RESTROOM/ BATHROOM)
  - 1. Robe Hook:
  - 2. Basis-of-Design Product: Bradley 931.
  - 3. Mounting: Flanges with concealed fasteners.
  - 4. Material: Die cast, high quality Zamac zinc alloy.
    - a. Finish: Polished chrome finish.
- K. Towel Bar: (PROVIDE ONE PER BATHROOM)
  - 1. Robe Hook:
  - 2. Basis-of-Design Product: Bradley 926

## LOVINGTON FIRE STATION # 2

3. Mounting: Flanges with concealed fasteners.
4. Material: Die cast, high quality Zamac zinc alloy.
  - a. Finish: Polished chrome finish.

### L. Underlavitory guards

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Plumberex Specialty Products, Inc.
  - b. TCI Products.
  - c. Truebro, Inc
2. Description: Insulating pipe covering for supply and drain piping assemblies that prevent direct contact with, and burns from piping, and allow service access without removing coverings.
3. Material and Finish: Antimicrobial, molded-plastic, white.

### M. Shower Curtain Rod:

1. Description: **1-inch OD; fabricated from nominal 0.0375-inch- thick stainless steel**
2. Mounting Flanges: **Stainless-steel flanges designed for exposed fasteners.**
3. Finish: **Stainless steel, No. 4 finish satin.**

### N. Shower Curtain: (Owner Provided)

### O. Folding Shower Seat:

1. Configuration: **L-shaped seat, designed for wheelchair access.**
2. Seat: **Phenolic or polymeric composite of slat-type or one-piece construction in color as selected by Architect.**
3. Mounting Mechanism: **Stainless steel, No. 4 finish (satin).**
4. Dimensions: 33" by 22 7/8"
- 5.

## 2.3 CUSTODIAL ACCESSORIES

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- C. Basis-of-Design Product: The design for accessories is based on products indicated. Subject to compliance with requirements, provide the named product or a comparable product by one of the following:
  1. A & J Washroom Accessories, Inc.
  2. American Specialties, Inc.
  3. Bobrick Washroom Equipment, Inc.

## LOVINGTON FIRE STATION # 2

4. General Accessory Manufacturing Co. (GAMCO).

D. Mop and Broom Holder:

1. Basis-of-Design Product: Bradley 9654 at each service sink.
2. Description: Unit with shelf, hooks, and holders suspended beneath shelf.
3. Length: 36 inches (914 mm).
4. Hooks: Three.
5. Mop/Broom Holders: Four, spring-loaded, rubber hat, cam type.
6. Material and Finish: Stainless steel, No. 4 finish (satin).

a. Shelf: Not less than nominal 0.05-inch- (1.3-mm-) thick stainless steel.

E. Wall Mounted Wire Shelf: (Extractor room # 115)

1. Basis of Design: Nexel Wall mounted wire shelf 36'W x 18" D x 14" 1- shelf – chrome
2. Model: 798053

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Grab Bars: Install to withstand a downward load of at least **250 lbf**, when tested according to ASTM F 446.

END OF SECTION 102800

## LOVINGTON FIRE STATION # 2

### SECTION 104413 - FIRE PROTECTION CABINETS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes fire-protection cabinets for portable fire extinguishers.

##### 1.2 SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For fire-protection cabinets.
- C. Maintenance data.

##### 1.3 COORDINATION

- A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.
- B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

##### 1.4 SEQUENCING

- A. Apply **decals** on field-painted fire-protection cabinets after painting is complete.

#### PART 2 - PRODUCTS

##### 2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements in ASTM E 814 for fire-resistance rating of walls where they are installed.

##### 2.2 FIRE-PROTECTION CABINET

- A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following.
  1. Larsen's Manufacturing Company, Gemini Series, G2727-RM
  2. Fire End & Croker Corporation.
  3. J.L. Industries, Inc. a division of Activar Construction Products Group
  4. Kidde Residential and Commercial Division, Subsidiary of Kidde plc.

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- B. Cabinet Type: Suitable for fire extinguisher.
- C. Cabinet Construction: **Nonrated**.
  - 1. Fire-Rated Cabinets: Construct fire-rated cabinets with double walls fabricated from **0.043-inch** thick cold-rolled steel sheet lined with minimum **5/8-in** thick fire-barrier material. Provide factory-drilled mounting holes.
- D. Cabinet Material: **Cold-rolled steel sheet**.
- E. Semirecessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).
  - 1. Square-Edge Trim: **1-1/4- to 1-1/2-inch** backbend depth.
  - 2. Rolled-Edge Trim: **4-1/2-inch** backbend depth.
- F. Surface-Mounted Cabinet: Cabinet box fully exposed and mounted directly on wall with no trim.
- G. Cabinet Trim Material: **Same material and finish as door**.
- H. Door Material: **Steel sheet**.
- I. Door Style: **Fully glazed panel with frameless**
- J. Door Glazing: **Acrylic sheet**.
  - 1. Acrylic Sheet Color: **Clear** transparent acrylic sheet.
- K. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
- L. Accessories:
  - 1. Break-Glass Strike: Manufacturer's standard metal strike, complete with chain and mounting clip, secured to cabinet.
  - 2. Door Lock: **Cam lock that allows door to be opened during emergency by pulling sharply on door handle**
  - 3. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location.
    - a. Identify fire extinguisher in fire-protection cabinet with the words "**FIRE EXTINGUISHER.**"
      - 1) Location: Applied to **cabinet door**.
      - 2) Application Process: **Decals**.
      - 3) Lettering Color: **as directed by Fire Department**.
      - 4) Orientation: **Vertical**.
- M. Materials:
  - 1. Cold-Rolled Steel: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.

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- a. Finish: **Baked enamel.**
- b. Color: **As directed by Fire department.**

### 2.3 FABRICATION

- A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Prepare recesses for **semirecessed** fire-protection cabinets as required by type and size of cabinet and trim style.
- B. Install fire-protection cabinets in locations and at mounting heights indicated **or, if not indicated, at heights acceptable to authorities having jurisdiction.**
- C. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.
- D. Identification: Apply **decals** at locations indicated.
- E. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.

END OF SECTION 104413

SECTION 104416 - FIRE EXTINGUISHERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes portable, hand-carried fire extinguishers **and mounting brackets for fire extinguishers.**

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Warranty: Sample of special warranty.
- C. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
- B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
- C. Coordinate type and capacity of fire extinguisher with fire protection cabinet to ensure fit and function.

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

- A. Fire Extinguishers: Type, size, and capacity for each **fire-protection cabinet and mounting bracket** indicated.
  - 1. Basics-of- Design Product:
    - a. Amerex Corporation
    - b. Ansul Incorporated; Tyco International Ltd,
    - c. Badger Fire Protection ; a Kidde company
    - d. Buckeye Fire Equipment Company
    - e. Fire End & Croker Corporation
    - f. J.L. Industries, Inc.
    - g. Kidde Residential and commercial Division; Subsidiary of Kidde plc.
    - h. Moon-American.
    - i. Pem All Fire Extinguisher Corp. a division of PEM Systems, Inc.



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- j. Potter Roemer LLC
  - k. Pyro-Chem; Tyco Saftey Products
2. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B, **and bar coding for documenting fire-extinguisher location, inspections, maintenance, and recharging.**
- B. Multipurpose Dry-Chemical Type: UL-rated 4A-80B;C (10 lbs) nominal capacity, with monoammonium phosphate-based dry chemical in manufacturer's standard enameled container.

### 2.3 MOUNTING BRACKETS

- A. Mounting Brackets: Manufacturer's standard **galvanized** steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or **black** baked-enamel finish.
- B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.
  - 1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Examine fire extinguishers for proper charging and tagging.
  - 1. Remove and replace damaged, defective, or undercharged fire extinguishers.
- B. Install fire extinguishers **and mounting brackets** in locations indicated and in compliance with requirements of authorities having jurisdiction.
  - 1. Mounting Brackets: **54 inches** above finished floor to top of fire extinguisher.
- C. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION 104416

SECTION 105113 - METAL LOCKERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Personal Storage Lockers
  - 2. Turn-Out Gear Racks

1.2 ACTION SUBMITTALS

- A. Product data.
- B. Sustainable Design Submittals:
- C. Shop Drawings: Include plans, elevations, sections, details, attachments to other work, and locker identification system and numbering sequence.
- D. Maintenance data.

1.3 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of metal lockers that fail in materials or workmanship, excluding finish, within specified warranty period.
  - 1. Warranty Period for Knocked-Down Metal Lockers: **Two** years from date of Substantial Completion.
  - 2. Warranty Period for Welded Metal Lockers: **10 years** from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Accessibility Requirements: For lockers indicated to be accessible, comply with applicable provisions in **the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC A117.1.**

2.2 PERSONAL STORAGE LOCKERS (Noted on Plans as L1)

- 1. Basis-of-Design: Norix Furniture Tiran Single Door Wardrobe

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2. Locker Arangement:
  - a. (3) Three per Dorm room: 24" by 24" by 78"
3. Material: Cut, formed, welded steel Powder coated steel
4. End Panels, top, back and shelf. 18 gauge steel
5. Door Panels: 20 gauge steel
6. Door Frame: 16 Gauge
7. Color: Khaki
8. Options:
  - a. 3-point latching system with padlock
  - b. Shelf kit
  - c. Towel bar
  - d. Coat kook

### 2.3 TURN-OUT GEAR RACK (Noted on Plans as L2)

- A. Basis-of-Design Product: Subject to compliance with requirements, Ready Rack, or a comparable product by on of the following:
  1. GearGrid
    - a. Size: 24" by 20" by 74 1/2"
    - b. Shelves: Two shelves constructed of high-strength 1/4" wire, and three apparel kooks per lockers
    - c. Door: No Door
    - d. Adjustability: wire shelves in 3" increments
    - e. Side and Back: High-Strength 1/4" wire
    - f. Name Plate: to be determined by Fire Department
    - g. Finish: Durable powder coat
    - h. Color:

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. General: Install lockers level, plumb, and true; shim as required, using concealed shims.
  1. Anchor locker runs at ends and at intervals recommended by manufacturer, but not more than **36 inches** o.c. Using concealed fasteners, install anchors through backup reinforcing plates, channels, or blocking as required to prevent metal distortion.
  2. Anchor single rows of metal lockers to walls per manufacture recommendations.
  3. Anchor back-to-back metal lockers to floor.
- B. Knocked-Down Lockers: Assemble with standard fasteners, with no exposed fasteners on door faces or face frames.
- C. Welded Lockers: Connect groups together with standard fasteners, with no exposed fasteners on face frames.

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- D. Trim: Fit exposed connections of trim, fillers, and closures accurately together to form tight, hairline joints, with concealed fasteners and splice plates.
1. Attach recess trim to recessed metal lockers with concealed clips.
  2. Attach filler panels with concealed fasteners.
  3. Attach sloping-top units to metal lockers, with closures at exposed ends.

END OF SECTION 105113

## LOVINGTON FIRE STATION # 2

### SECTION 107516 - GROUND-SET FLAGPOLES

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes ground-set flagpoles made from **aluminum**.

##### 1.2 SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, operating characteristics, fittings, accessories, and finishes for flagpoles.
- B. Operation and Maintenance Data: For flagpoles to include in operation and maintenance manuals.

#### PART 2 - PRODUCTS

##### 2.1 MANUFACTURERS

- A. Source Limitations: Obtain flagpoles as complete units, including fittings, accessories, bases, and anchorage devices, from single source from single manufacturer.
  - 1. American Flagpole; a Kearney-National Inc. company
  - 2. Atlantic Fiberglass Products, Inc.
  - 3. Baartol Company
  - 4. Concord Industries, Inc
  - 5. Eder Flag Manufacturing Company, Inc.
  - 6. Ewing Flagpoles
  - 7. Lingo Inc. Acme Flagpole Company Division
  - 8. Millerbernd Manufacturing Company
  - 9. Morgan-Francis; Division of Original Tractor Cab Co. Inc.
  - 10. PLP Composite Technology, Inc.
  - 11. Pole-Tech Company Inc.
  - 12. U.S. Flag pole & Flagple Supply, LP
  - 13. USS Manufacturing Inc.

##### 2.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design flagpole assemblies.

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- B. Structural Performance: Flagpole assemblies, including anchorages and supports, shall withstand design loads indicated within limits and under conditions indicated.
  - 1. Wind Loads: Determine according to NAAMM FP 1001. Basic wind speed for Project location is 100 mph.
  - 2. Base flag pole design on polyester flags of maximum standard size suitable for use with flagpole.

### 2.3 ALUMINUM FLAGPOLES

- A. Aluminum Flagpoles: **Cone**-tapered flagpoles fabricated from seamless extruded tubing complying with ASTM B 241/B 241M, Alloy 6063, with a minimum wall thickness of **3/16 in or 1/8"** per manufacture
- B. Exposed Height: **30 feet**
- C. Metal Foundation Tube: Manufacturer's standard corrugated-steel foundation tube, **0.060-inch** wall thickness with **3/16-inch** steel bottom plate and support plate; **3/4-inch** diameter, steel ground spike; and steel centering wedges welded together. Galvanize foundation tube after assembly. Furnish loose hardwood wedges at top of foundation tube for plumbing pole.
- D. Sleeve for Aluminum Flagpole: **Fiberglass** foundation sleeve, made to fit flagpole, for casting into concrete foundation.

### 2.4 FITTINGS

- A. Finial Ball: Flush-seam ball, sized as indicated or, if not indicated, to match flagpole-butt diameter.
  - 1. **0.063-inch** spun aluminum , **finished to match flagpole**
- B. External Halyard: Ball-bearing, nonfouling, revolving truck assembly of cast metal with continuous **5/16-inch- diameter, braided polypropylene halyard** and **9-inch** cast-metal cleats with fasteners. Finish exposed metal surfaces to match flagpole.
  - 1. Halyards and Cleats: **Two** at each flagpole.
  - 2. Halyard Flag Snaps: **Stainless-steel** swivel snap hooks **with neoprene or vinyl covers**. Furnish two per halyard.

### 2.5 MISCELLANEOUS MATERIALS

- A. Drainage Material: Crushed stone, or crushed or uncrushed gravel; coarse aggregate.
- B. Sand: ASTM C 33/C 33M, fine aggregate.
- C. Elastomeric Joint Sealant: joint sealant complying with requirements in Section 079200 "Joint Sealants."

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- D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

### 2.6 ALUMINUM FINISHES

- A. Natural Satin Finish: AA-M32, fine, directional, medium satin polish; buff complying with AA-M20; seal aluminum surfaces with clear, hard-coat wax.
- B. Color Anodic Finish: AAMA 611, **AA-M12C22A42/A44**.
  - 1. Color: clear finish on pole.
  - 2. Color Ball: finish to match pole

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Prepare uncoated metal flagpoles that are set in foundation tubes by painting below-grade portions with a heavy coat of bituminous paint.
- B. Foundation Excavation: Excavate to neat clean lines in undisturbed soil. Remove loose soil and foreign matter from excavation and moisten earth before placing concrete. Place and compact drainage material at excavation bottom.
- C. Foundation Tube: Place foundation tube, center, and brace to prevent displacement during concreting. Place concrete. Plumb and level foundation tube and allow concrete to cure.
- D. Sleeves: Locate and secure sleeves in forms by bracing to reinforcement and forms.
- E. Place concrete, as specified in **Section 033000 "Cast-in-Place Concrete."** Compact concrete in place by using vibrators. Moist-cure exposed concrete for no fewer than seven days or use nonstaining curing compound.
- F. Trowel exposed concrete surfaces to a smooth, dense finish, free of trowel marks, and uniform in texture and appearance. Provide positive slope for water runoff to perimeter of concrete base.

### 3.2 FLAGPOLE INSTALLATION

- A. General: Install flagpoles where indicated and according to **Shop Drawings and** manufacturer's written instructions.
- B. Foundation Tube: Place flagpole in tube, seated on bottom plate between steel centering wedges, and install hardwood wedges to secure flagpole in place. Place and compact sand in foundation tube and remove hardwood wedges. Seal top of foundation tube with a **2-inch** layer of elastomeric joint sealant and cover with flashing collar.

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3.3 SCHEDULE

- A. (1) One Flag pole and flag located per Plans
- B. Flags: One (1) United States Size: (4) Four feet by (6) six feet or per manufacture's standard

END OF SECTION 107516



SECTION 113100 - RESIDENTIAL APPLIANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cooking appliances.
2. Kitchen exhaust ventilation.
3. Refrigeration appliances
4. Dishwasher
5. Clothes Washer, Dryer and Extractor
6. Hose Dryer
7. Food Waste Disposal
8. Stainless Steel Shelf

1.2 SUBMITTALS

- A. Product Data: For each type of product.
- B. Product certificates.
- C. Field quality-control reports.
- D. Sample warranties.
- E. Operation and maintenance data.

1.3 QUALITY ASSURANCE

- A. Gas-Fuel Conversion: Provide gas-fueled appliances with manufacturer's **high-altitude and propane** conversion kit installed by a qualified service agency according to manufacturer's written instructions for Project location and type of fuel.

1.4 WARRANTY

- A. Special Warranties: Manufacturer agrees to repair or replace residential appliances or components that fail in materials or workmanship within specified warranty period.
  1. Microwave Oven: Five year from the date of substantial completion
  2. Refrigerator/ Freezer: Five year from the date of substantial completion.

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### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Electrical Appliances: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Gas-Fueled Appliances: Certified by a qualified testing agency for each type of gas-fueled appliance according to ANSI Z21 Series standards.

#### 2.2 RANGES

- A. Gas Range **Freestanding** range with **two** ovens. (ONE IN KITCHEN)
  - 1. Basis of Design : Value Series 60-CPGV-24RG-26 60”
  - 2. Gas Burners: **Six**.
  - 3. Anti-Tip Device: Manufacturer's standard.
  - 4. Material: **Stainless** steel with **manufacturer's standard**] [c cooktop
- B. Gas Outdoor Grill: (ONE. OWNER PROVIDED, CONTRACTOR INSTALLED)
  - 1. Basis-of-Design: Kitchenaid Model # 740-0780
  - 2. 4-Burner Built-in Propane Gas Island Grill Head in Stainless Steel with Rotisserie Burner

#### 2.3 MICROWAVE OVENS (ONE IN KITCHEN)

- A. Microwave Oven:
  - 1. Available Products;
    - a. Amana Appliances.
    - b. General Electric Company
    - c. Hotpoint
    - d. KitchenAid
    - e. Maytag
  - 2. Mounting: **Wall cabinet**.
  - 3. Capacity: **2.2 cu. ft. (Verify that Microwave will fit in casework prior to ordering)**
  - 4. Microwave Power Rating: **Manufacturer's standard**.
  - 5. Material: **Stainless steel** or Per Fire Department.

#### 2.4 KITCHEN EXHAUST VENTILATION (ONE IN KITCHEN)

- A. Provide Kitchen Exhaust as noted on Mechanical sheets and Mechanical Specifications

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2.5 REFRIGERATOR/FREEZERS (THREE IN KITCHEN)

- A. Refrigerator/Freezer **Two-door, side-by-side refrigerator/freezer** and complying with AHAM HRF-1.
1. Basis of Design: Frigidaire Model FFHS2622MS
  2. Type: **Freestanding**.
  3. Storage Capacity:
    - a. Refrigeration Compartment Volume: **16.5cu. ft.**
    - b. Freezer Volume: **9.0 cu. ft.**
  4. General Features:
    - a. Interior light in refrigeration compartment.
    - b. **Automatic** defrost.
    - c. Interior light in freezer compartment.
    - d. Automatic icemaker and storage bin.
  5. ENERGY STAR: Provide appliances that qualify for the EPA/DOE ENERGY STAR product-labeling program.
  6. Front Panel(s): **Stainless steel**

2.6 DISHWASHERS (ONE IN KITCHEN)

- A. Dishwasher Complying with AHAM DW-1.
1. Basis-of-Design: General Electric Built in Dishwasher; Model PDF82022JSS
  2. Type: **Built-in undercounter**.
  3. ENERGY STAR: Provide appliances that qualify for the EPA/DOE ENERGY STAR product-labeling program.
  4. Noise Level: 60 Dba MAX.
  5. Front Panel: **Stainless steel**

2.7 CLOTHES WASHERS AND DRYERS

- A. Clothes Washer: Complying with AHAM HLW-1. (ONE IN UTILITY ROOM)
1. Basis-of-Design: LG Electronics, Model # WT1101CW
  2. Type: **Freestanding top**-loading unit.
  3. Capacity: **4.1 cu. ft.**
  4. ENERGY STAR: Provide appliances that qualify for the EPA/DOE ENERGY STAR product-labeling program.
  5. Water-Efficient Clothes Washer: Provide clothes washer with modified energy factor greater than or equal to 2.0 and water factor less than 5.5.
  6. Appliance Finish: **Enamel**.
  7. Front-Panel Finish: White
- B. Clothes Dryer: Complying with AHAM HLD-1. (ONE IN UTILITY ROOM)

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1. Basis-of-Design: LG Electronics, Model # DLE1101W
2. Type: **Freestanding**, frontloading, **electric** unit.
3. Capacity: **7.3 cu. ft. (0.20 cu. m)]** <Insert volume>.
4. Features:
  - a. Interior drum light.
  - b. Stacking kit to stack dryer over washer.
  - c. Pedestal: **Manufacturer's standard height** laundry pedestal with storage drawer, matching appliance finish.
5. Appliance Finish: **Enamel**.
6. Front-Panel Finish: White

### C. CLOTHES WASHER EXTRACTOR (ONE IN EXTRACTOR ROOM)

1. Basis-of-Design: Continental Girbau EH060
2. Capacity: 60 lbs
3. Cylinder Diameter: 31 inches
4. Available Voltage/Wire Conductor/Amp: 208-240/60/1,2W+G,15 AMP

### 2.8 HOSE DRYER (ONE IN EXTRACTOR ROOM)

1. Basis-of-Design: Circul-Air-Corp, Model # Series 100B

### 2.9 FOOD WASTE DISPOSAL (ONE IN KITCHEN)

- A. Provide Food Waste disposal unit per Plumbing sheets and Specifications.

### 2.10 STAINLESS STEEL SHELF

- A. 18 gauge stainless steel 12 wide wall shelf and wall with brackets. Overall height 10 inches, Color: silver. Length as shown on drawings.
- B. Solid surface stainless steel 18 gauge 430 stainless steel construction #4 finish
- C. Flat front and sides which meet 90 degrees. The edges are welded and ground smooth.
- D. 200 Wight Capacity

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Built-in Equipment: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and that rough openings are completely concealed.
- B. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.

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- C. Range Anti-Tip Device: Install at each range according to manufacturer's written instructions.

### 3.2 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
  - 1. Perform visual, mechanical, and electrical inspection and testing for each appliance according to manufacturers' written recommendations. Certify compliance with each manufacturer's appliance-performance parameters.
  - 2. Leak Test: After installation, test for leaks. Repair leaks and retest until no leaks exist.
  - 3. Operational Test: After installation, start units to confirm proper operation.
  - 4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and components.
- B. An appliance will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

END OF SECTION 113100

## LOVINGTON FIRE STATION # 2

### SECTION 115200 – ELECTRONIC DIGITAL SYSTEMS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Description of Audio-Visual System as a Basis-of-Design to be provided as part of Audio-Visual allowance .
2. Audio-Visual system will be reassessed at time of Bid

##### 1.2 ACTION SUBMITTALS

###### A. Product Data: For each type of product.

###### B. Shop Drawings: Show layouts and types of front-projection screens and TV mount. Include the following:

1. Location of seams in viewing surfaces.
2. Anchorage details, including connection to supporting structure for suspended units.
3. Location of wiring connections for electrically operated units.
4. Wiring diagrams for electrically operated units.

#### PART 2 - DESCRIPTION OF WORK

##### A. TRAINING ROOM

1. Projector:
  - a. Sony/VPL-CH375/ Compact 5000 lumen WUXGA projector
2. Projector Mount:
  - a. Chief/ RPMAU/ RPA Elite Universal Projector Mount with Keyed Locking.
3. Projection Screen:
  - a. Draper/ Access V / 140040L/ Recessed / In-ceiling tab tension projection screen with low voltage control switch
4. Ceiling Speakers:
  - a. Tannoy/ CVS 6/ 6" Coaxial In-Ceiling Loudspeaker for Installation Applications
5. Amplifier:
  - a. Atlas Sound/ PA1001G/ 100W Single channel pole mounted amplifier
6. HDMI/Computer Interface:
  - a. Aurora/ DEX-CAT-S1-4k/ HDBaseT CAT extender kit for HDMI / Computer
7. Window Shades:
  - a. Draper/ FlexShade / TBD/ Motorized Window Shades (Multiple fabrics and fascia options available)

##### B. DAYROOM

1. Display:

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- a. LG/ 75SJ8570/ SUPER UHD 4K HDR Smart LED TV - 75" Class
  2. Display Mount:
    - a. Chief/ LTM1U/ Large Fusion Micro-Adjustable Tilt Wall Mount
  3. Soundbar:
    - a. LG/SH6/ 4.0ch 150W Music Flow Wi-Fi Streaming Sound Bar with Dual Bass Ports
  4. HDMI/Computer Interface:
    - a. Aurora/ DXW-2-S1-W-4K/ HDBaseT CAT extender kit for HDMI / Computer w/wall plate interface
- C. Miscellaneous cables and hardware will be required to complete this installation. Items listed include the core equipment necessary. Provide all Miscellaneous cables and equipment to complete work.

END OF SECTION 115200

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SECTION 119000 – OTHER EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. CONTROLLED ACCESS PHARMACEUTICAL DISPENSERS
2. HIGH PRESSURE BREATHING AIR COMPRESSOR

1.2 SUBMITTALS

- A. Product Data: For each type of product
- B. Product certificates.
- C. Sample warranties.
- D. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 CAP MACHINE – CONTROLLED ACCESS PHARMACEUTICAL DISPENSERS

- A. CAP 5 (NIC, ONE IN EMS STORAGE # 110) OWNER PROVIDED CONTRACTOR INSTALLED
  1. Basis-of-Design: U-SELECT-IT CORPORATION, Item # 4310-50507
  2. Capacity; 630 items
  3. Dimensions: 72” by 41” by 34 1/8”
  4. Weight: 628 lbs
  5. Color: Black
- B. CAP 4 (NIC, ONE IN EMS STORAGE # 110) OWNER PROVIDED CONTRACTOR INSTALLED
  1. Basis-of-Design: U-SELECT-IT CORPORATION, Item # 4310-30412
  2. Capacity; 4 door locker
  3. Dimensions: 72” by 30 1/4” by 24 1/2”
  4. Weight: 375 lbs
  5. Color: Black
- C. CAP 12 (NIC, ONE IN EMS STORAGE # 110) OWNER PROVIDED CONTRACTOR INSTALLED
  1. Basis-of-Design: U-SELECT-IT CORPORATION, Item # 4310-12412



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2. Capacity; 12 door locker
3. Dimensions: 72" by 30 1/4" by 24 1/2"
4. Weight: 357 lbs
5. Color: Black

2.2 HIGH PRESSURE BREATHING AIR COMPRESSOR

- A. UNICUS III (ONE IN SCBA ROOM) CONTRACTOR PROVIDED AND INSTALLED
  1. Basis-of-Design: Unicus III, Model # UN III/13 H-E1/ E3 – UN III/ 26-E3

END OF SECTION 119000

SECTION 122113 - HORIZONTAL LOUVER BLINDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Horizontal louver blinds with **aluminum** slats.

1.2 SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For horizontal louver blinds, include fabrication and installation details.

C. Samples: For each exposed finish

D. Maintenance data.

PART 2 - PRODUCTS

2.1 HORIZONTAL LOUVER BLINDS, ALUMINUM SLATS

A. Available Products:

1. Bali Blinds
2. Hunter Douglas
3. Levolor, Newell Rubbermaid Company
4. Spring Window Fashins Division, Inc.

B. Slats: Aluminum; alloy and temper recommended by producer for type of use and finish indicated; with crowned profile and radius corners.

1. Width: **1 inch**.
2. Thickness: **Manufacturer's standard**

C. Headrail: Formed steel or extruded aluminum; long edges returned or rolled. Headrails fully enclose operating mechanisms on three sides.

D. Bottom Rail: Formed-steel or extruded-aluminum tube that secures and protects ends of ladders and lift cords and has plastic- or metal-capped ends.

E. Ladders: Evenly spaced to prevent long-term slat sag.

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- F. Lift Cord: Manufacture's standard
- G. Tilt Control: Enclosed worm-gear mechanism, and linkage rod
- H. Lift Operation: Manual
- I. Mounting Brackets: With spacers and shims required for blind placement and alignment indicated.
- J. Hold-Down Brackets and Hooks or Pins: Manufacturer's standard.
- K. Side Channels and Perimeter Light Gap Seals: Manufacturer's standard.
- L. Colors, Textures, Patterns, and Gloss:
  - 1. Slats: **As selected by Architect from manufacturer's full range.**
  - 2. Components: **Provide rails, cords, ladders, and materials exposed to view matching or coordinating with slat color unless otherwise indicated.**

### 2.2 HORIZONTAL LOUVER BLIND FABRICATION

- A. Product Safety Standard: Fabricate horizontal louver blinds to comply with WCMA A 100.1 including requirements for corded, flexible, looped devices; lead content of components; and warning labels.
- B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at **74 deg F**:
  - 1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which blind is installed less **1/4 inch** per side or **1/2 inch** total, plus or minus **1/8 inch**. Length equal to head-to-sill dimension of opening in which blind is installed less **1/4 inch**, plus or minus **1/8 inch**.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install horizontal louver blinds level and plumb, aligned and centered on openings, and aligned with adjacent units according to manufacturer's written instructions.
  - 1. Locate so exterior slat edges are not closer than **1 inch** from interior faces of glass and not closer than **1/2 inch** from interior faces of glazing frames through full operating ranges of blinds.
  - 2. Install mounting and intermediate brackets to prevent deflection of headrails.
  - 3. Install with clearances that prevent interference with adjacent blinds, adjacent construction, and operating hardware of glazed openings, other window treatments, and similar building components and furnishings.

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- B. Electrical Connections: Connect motorized operators to building electrical system.
- C. Adjust horizontal louver blinds to operate free of binding or malfunction through full operating ranges.
- D. Clean horizontal louver blind surfaces after installation according to manufacturer's written instructions.

### 3.2 SCHEDULE

- A. Install blinds at all exterior windows as noted: Window Type D1, G1, E1, C-2,

END OF SECTION 122113

## LOVINGTON FIRE STATION # 2

### SECTION 122413 - ROLLER WINDOW SHADES

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Manually operated roller shades with single rollers.

##### 1.2 SUBMITTALS

###### A. Product Data: For each type of product.

###### B. Shop Drawings: Show fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations.

1. Motor-Operated Shades: Include details of installation and diagrams for power, signal, and control wiring.

###### C. Samples: For each exposed product and for each color and texture specified.

###### D. Product certificates.

###### E. Product test reports

###### F. Operation and maintenance data.

#### PART 2 - PRODUCTS

##### 2.1 MANUFACTURERS

###### A. Source Limitations: Obtain roller shades from single source from single manufacturer.

##### 2.2 MANUALLY OPERATED SHADES WITH SINGLE ROLLERS

###### A. Basis-of-Design:

1. DFB Sales, Inc., 21-07 Borden Avenue, Long Island City, NY 11101, 718.729.8310, 800.433.4546, Product Sol-R-Shade: email: [Sales@dfbsales.com](mailto:Sales@dfbsales.com), Web Site: [www.dfbsales.com](http://www.dfbsales.com). Or comparable product by one of the following

- a. BTX Window Automation, Inc. RS-10 Manual
- b. Draper inc. LightBloc Manual FlexShade

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- c. MechoShade Systems, Inc. Mecho-5 Room Darkening
- d. Nysan Dolar Control inc.
- e. Shade Techniques, LLC
- f. SKYCO Tech Shades

### PART 3 - ROLLER SHADES

#### 3.1 CHAIN OPERATED WINDOW SHADES

- A. Operating System: Adjustment-free, controlled by a nickel-plated steel ball chain, 90 lb test. The clutch system shall be comprised of multi-banded steel springs that create the pressure necessary to keep the shade in its desired position. The clutch shall develop no more than 1/2 lb drag for easy fit.
- B. Mounting Brackets: Made from 16-gauge galvanized steel capable of being mounted in any position.
- C. Shade Mounting System: The tube shall be 1-1/2 inch in O. D. rolled steel 26 gauge.
- D. Hem/Hem bar: The hem bar shall be extruded aluminum weighing 1/4 lb per linear foot and sit behind two thicknesses of shade cloth. The hem shall be triple thick with an electronically welded seam.

#### 3.2 SHADECLOTH

- A. Performance: The shade cloth shall hang flat without defection or distortion. The edges of the shade band shall be cut square to insure true tracking of the shade cloth and cut clean so that the core yarn is not exposed.
- B. Flame Retardance: The shade cloth shall pass the California Flame Text Title 19, Section 1273.3, medium scale test for interior fabric and shall pass NFPA 701-99 Flame Test.
- C. Sol-R-Control Shade cloth:
  - 1. Series: As selected by Architect from standard options
  - 2. Color: As selected by Architect from standard colors
  - 3. Openness: As selected by Architect from standard options
- D. SCHEDULE:
  - a. Window Type A1: Provide Blackout shade cloth material
  - b. Window Type C1: Provide Blackout shade cloth material
  - c. Window Type H1: Provide shade cloth material manufacture's standard

### PART 4 - EXECUTION

#### 4.1 ROLLER SHADE INSTALLATION

- A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.

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1. Opaque Shadebands: Located so shadeband is not closer than **2 inches** to interior face of glass. Allow clearances for window operation hardware.
- B. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.
- C. Clean roller shade surfaces, after installation, according to manufacturer's written instructions.
- D. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

END OF SECTION 122413