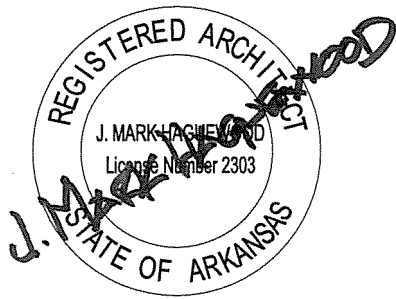


# Washington County

## Sheriff's Office Interior Remodel

### Fayetteville, Arkansas

Project No. 2433



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PROPOSAL FORM  
GENERAL CONDITIONS  
SPECIFICATIONS  
FOR FURNISHING LABOR AND  
MATERIALS FOR:  
CONSTRUCTION OF  
**WASHINGTON COUNTY  
SHERIFF'S OFFICE INTERIOR REMODEL  
FAYETTEVILLE, ARKANSAS**

HIGHT JACKSON ASSOCIATES PA  
ARCHITECT, A.I.A.  
ROGERS, ARKANSAS

PROJECT #2433

OCTOBER 25, 2024

PROJECT MANUAL FOR CONSTRUCTION OF  
**WASHINGTON COUNTY**  
**SHERIFF'S OFFICE INTERIOR REMODEL**  
**FAYETTEVILLE, ARKANSAS**

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### PROPOSAL PROCEDURE

#### PART 1 GENERAL

##### 1.1 PROPOSAL INSTRUCTIONS

- A. Should a proposer find discrepancies in, or omissions from the drawings, or documents, or should he be in doubt as to their meaning, he shall at once notify the Architect, who will send written instructions to all Proposers. Neither Owner nor Architect will be responsible for any oral instruction. Transmit pre-bid questions to Architect, using the RFI Form, found at the end of this Section. "RFI" will be answered and returned to bidder. If answer warrants change to contract documents during bidding, it will be listed in an addendum.
- B. Proposals shall be made upon the PROPOSAL FORM (or exact copy thereof) found bound into these specifications. Fill in all blanks on the Proposal Form. Changes in the proposal must be explained or noted over the signature of the Proposer. Signatures shall be in longhand by a principal duly authorized to sign contracts, or an officer of the company legally authorized to sign all documents on behalf of the company. Proof of such authorization should be on file with Architect or be included with the bid form. If proposal is by a corporation, the signature shall be accompanied by the corporate seal impression. Proposals shall contain neither alterations nor recapitulation of work to be done.
- C. No oral or telephonic proposals or modifications will be considered. No telegraphic proposals will be considered, but modification by telegraph of proposals already submitted will be considered if received prior to time set for proposal opening. All proposals received will be publicly opened and read aloud.
- D. Any addenda issued during the time of preparation of proposals are to be acknowledged in the Proposal Form and in closing a contract; they will become a part thereof.

##### 1.2 SUBMISSION OF BID

- A. Before submitting his proposal, each Proposer shall carefully examine all documents pertaining to the work, shall visit site and fully inform himself as to all existing conditions under which the work will be performed. Submission of a proposal will be considered presumptive evidence that the Proposer is fully aware of the conditions of the work, requirements of the Contract Documents, pertinent state and local codes, conditions of labor and material markets, and has made allowances in his proposal for all work and all contingencies.

- B. Bids must be submitted on or before date and time specified for bid opening to the place of receiving indicated on Proposal for Lump Sum Contract form. Each bid is to be placed in a separate opaque envelope, completely and properly identified, including the following information:
  - PROPOSAL FOR (State category of the Work)
  - NAME OF PROJECT
  - PROJECT NUMBER
  - ADDRESS OF PROJECT
  - BID OPENING DATE AND TIME
  - NAME OF BIDDER
  - STATE CONTRACTOR'S LICENSE NUMBER
- C. Enclose along with the proposal, the required proposal security.
- D. Deliver proposal to the place of receiving indicated on Proposal for Lump Sum Contract.
- E. Late bids will not be considered under any circumstances
- F. Failure to sign bid will result in disqualification. The person signing the bid should show title or authority to bind his/her firm to a contract. The signature must be in ink. The bid must be completed in ink or typed.

### 1.3 PROPOSAL SECURITY

- A. Proposal Security, consisting of a bid bond, certified check or cashier check on a solvent bank, must be enclosed with each proposal in the amount of not less than five percent (5%) of the largest combined Bid in his Base Proposal. **Bid bond, certified check or cashier check are to be originals. No copies will be accepted.**
- B. Proposal Security shall be made payable, without condition, to Washington County Sheriff's Office, Fayetteville, AR, as a guarantee that the bidder, if awarded the contract, will promptly execute the formal contract in accordance with the proposal and as required by other Contract Documents, and that he will furnish good and sufficient bonds for the faithful performance of same. Proposal Securities of the three lowest bidders in each category of work will be retained until the contract is awarded or other disposition is made thereof. Proposal Security of all bidders shall be returned promptly after the canvas of proposals.
- C. Performance Bond and Labor and Material Payment Bond, Statutory Bond, will be required in an amount of 100% of the contract amount. Such bonds shall be in such a form as required by the Owner and with such sureties as the Owner may approve.
- D. Furnish Owner, through the Architect, with two (2) copies of the signed "Contractor's and Resident Local Agents Affidavit of Qualification" found at the end of this section. *(This form is not required until award of contract.)*

- E. Performance Bond, Labor & Material Payment Bond, and Contractor's Resident Local Agents Affidavit of Qualification shall not be required for submittal prior to bidding but will be required prior to signing of contract.
- F. Copies of the Contract Form and approved Bond Forms may be inspected at the Architect's office.

#### 1.4 LICENSING / BIDDING REQUIREMENTS

- A. Contractor is required to meet all state laws concerning bidding requirements in the state for which the job is being constructed. Each Contractor is required to have a Contractor's License according to the Contractor's Licensing Act of the Arkansas State Licensing Law for Contractors. The Contractor shall indicate on his bid, his current license number as issued by the Contractor's Licensing Board. The license must be current day of bidding and throughout length of project.
  - 1. Proposals must be submitted in compliance with requirements of Arkansas State Contractor's Licensing Law. Bidders who submit proposals in excess of \$50,000 must submit evidence of having an Arkansas State Contractor's license before their bids will be considered.
- B. Subcontractor licensing in the State of Arkansas.
  - 1. Subcontractors who submit proposals more than \$50,000.00 must have a current Arkansas State Contractor's License.
    - a. As a condition to performing construction work for and in the State of Arkansas, all prime contractors shall use no other subcontractors when the subcontractors' portion of the project is Fifty Thousand Dollars (\$50,000.00) or more, except those licensed by the Contractors Licensing Board and qualified in:
      - 1. Mechanical, indicative of heating, air-conditioning, ventilation, and refrigeration.
      - 2. Plumbing.
      - 3. Electrical, indicative of wiring and illuminating fixtures; and
    - b. In the event the prime contractor is qualified and licensed by the Contractors Licensing Board, he may use his own forces to perform those tasks listed in this section as subcontractors in one (1) or more of the trades listed.
  - 2. The prime contractor shall place the names of each subcontractor in a blank space to be provided on the Form of Proposal of his bid. It shall be mandatory that the a) mechanical, b) plumbing, and c) electrical subcontractors named on the Form of Proposal by the prime contractor awarded a contract under the provision of this Act be given contracts by the prime contractor in keeping with their proposals to perform the items for which they were named. **If the prime contractor is performing the work for the trade listed, they must list their own company in the space provided.**
- C. Your attention is called to the state law(s) requiring all specialty contractors bidding as subcontractors must be licensed by the State of Arkansas. Also, they must be licensed the day they bid the project.

## 1.5 AWARD OF CONTRACTS

- A. Contract will be awarded as soon as possible to the responsible Proposer submitting the lowest acceptable proposal provided.
  - 1. Evidence of the experience qualifications and financial responsibility of the bidder and his subcontractors, and the time of completion are all acceptable to the Owner.
  - 2. The total of acceptable proposals is within the financial budget for the project.
  - 3. The Owner reserves the right to reject any or all proposals and to waive all technicalities concerning the proposals received when it may be in his best interest to do so.

## 1.6 TIME OF COMPLETION

- A. The Contractor agrees, if awarded the contract to complete the project within **Seventy-five (75) Calendar Days** after the date noted in the Notice to Proceed.

The Undersigned further agrees that, from the compensation otherwise to be paid, the Owner may retain the dollar amount as listed on the Proposal Form for each day thereafter that the Contract remains incomplete, as defined in Article. 9.8 of the General Conditions of the contract, which sum is agreed upon as the proper measure of liquidated damages which the Owner will sustain per diem by the failure of the Undersigned to complete the work at the time stipulated, and this amount is not to be construed as in any sense a penalty.

## 1.7 CONTRACT

- A. If he be notified of the acceptance of his proposal within thirty (30) calendar days of the time set for opening of proposals, the Undersigned agrees to execute a contract for the above work for the above stated compensation in the form of the Standard Form of Agreement between Owner and Contractor, Document No. A101, as issued by the American Institute of Architects, current edition within seven (7) calendar days of the receipt of such notification.

## 1.8 OBLIGATION OF BIDDER

- A. At the time of opening of bids each Bidder will be presumed to have inspected the site and the means of access and transportation required, and to have read and to be thoroughly familiar with the Drawings, Specifications, bidding documents and contract documents, including all Addenda. The failure or omission of any Bidder to examine any form, instrument or document, or to inform himself of conditions relating to the construction of the project, shall in no way relieve any Bidder from any obligation in respect to his bid.
- B. ALL CONTRACTORS MUST BE LICENSED ON THE DAY OF THE BID SUBMITTAL.

## 1.9 QUALIFICATIONS OF BIDDER

- A. Contractor Pre-qualification: Contractor shall be a recognized general contractor, skilled and experienced in the type of construction required, and equipped to perform workmanship in accordance with recognized standards. Include completed AIA Document A305 (copy available at Architect's office) with proposal. Contractor will not be required to provide Pre-qualification Document A305 if he has performed and completed work of similar size and nature for a project designed and administrated by Hight Jackson Associates within the past Three years.
- B. Owner may make such investigations as he deems necessary to determine the ability of Bidder to perform the work and Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. Owner reserves the right to reject any bid if evidence submitted by, or investigation of, such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein.

## 1.10 LAWS AND REGULATIONS

- A. The bidder's attention is directed to the fact that all applicable Federal and state Laws, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.
- B. Pursuant to Arkansas Code Annotated § 22-9-203, the State encourages all small, minority, and women business enterprises to submit bids for capital improvements. Encouragement is also given to all general contractors that in the event they subcontract portions of their work, consideration is given to the identified groups.

## 1.11 SITE VISITS

- A. Visits to the site by Bidders after the pre-bid meeting may be made only by appointment with the Owner's representative, Cory Weathers, 479-444-5700.

PART 2 NOT USED

PART 3 NOT USED

END OF SECTION

00 21 16-5



CONTRACTOR’S AND RESIDENT OR NON-RESIDENT LOCAL AGENT’S

AFFIDAVIT OF QUALIFICATIONS

Comes now \_\_\_\_\_, hereinafter  
called “CONTRACTOR” and \_\_\_\_\_  
hereinafter called “RESIDENT OR NON-RESIDENT LOCAL AGENT”, and after being duly  
sworn states under oath and under penalty of perjury that they have independently examined the  
status of the bonding company providing the performance bond for the contract entered into  
between CONTRACTOR and WASHINGTON COUNTY SHERIFF’S OFFICE  
on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, and state that each  
has independently examined the status of the proposed bonding company and states that the  
proposed bonding company is qualified and authorized to do business in the State of Arkansas.

The RESIDENT OR NON-RESIDENT LOCAL AGENT further affirms that he is  
license by the Arkansas Insurance Commissioner to represent the surety company executing the  
bond and files herewith the agent’s power of attorney as his authority.

FURTHER AFFIANTS SAITH NOT.

\_\_\_\_\_  
CONTRACTOR

\_\_\_\_\_  
RESIDENT LOCAL AGENT

00 21 16-6

REQUEST FOR INFORMATION FORM

SUBMIT TO: HIGHT JACKSON ASSOCIATES PA  
5201 W. VILLAGE PARKWAY, SUITE 300  
ROGERS, AR 72758  
PHONE: (479) 464-4965  
Email: jandrade@hjarch.com

PROJECT: Washington County Sheriff's Office Interior Remodel, Fayetteville, aR

PROJECT #: 2433

RFI # \_\_\_\_\_ DATE SUBMITTED: \_\_\_\_\_

REQUIRED ANSWER DATE: \_\_\_\_\_

REQUESTING CONTRACTOR'S NAME: \_\_\_\_\_

Requesting Contractor's email address or fax #: \_\_\_\_\_

All requests must include the associated reference such as drawing #, spec section, room #, column line location, etc.

REFERENCE:

REPLY:

Jorge Andrade

DATE: \_\_\_\_\_

CC: RFI file

00 21 16-7

Washington County  
Sheriff's Office Interior Remodel  
Fayetteville, Arkansas

00 42 13  
PROPOSAL FOR LUMP SUM CONTRACT

PLACE: Washington County Courthouse, 280 N. College, Suite 500, Fayetteville, AR 72701

---

DATE & TIME: November 14, 2024, at 10:00 AM local time

---

PROJECT: Washington County Sheriff's Office Interior Remodel, Fayetteville, AR

---

PROPOSAL OF

---

(Hereinafter called the "Bidder")

A Corporation, organized and existing under the laws of the State of \_\_\_\_\_

A Partnership consisting of \_\_\_\_\_

An individual trading as \_\_\_\_\_

TO: WASHINGTON COUNTY SHERIFF'S OFFICE

Gentlemen:

The undersigned, in compliance with your invitation for bids for the construction of Washington County Sheriff's Office Interior Remodel, Fayetteville, AR, having examined the plans and specifications with related documents, and having visited the site of the proposed work within the past seven (7) days, and being familiar with all the conditions surrounding the construction of the proposed project, including the availability of materials and labor, hereby propose to furnish all labor, materials, supplies, etc., and to construct the project in accordance with the contract documents within the time set forth therein and at the prices stated herein, to cover all general construction work, including plumbing, mechanical and electrical. These prices are to cover all expenses incurred in performing the work required under the contract documents of which this proposal is a part.

I/We acknowledge receipt of the following Addenda:

*(Arkansas public bid statutory requirement: Bidder must acknowledge all addenda issued by addendum number)*

# _____	Dated _____
# _____	Dated _____
# _____	Dated _____
# _____	Dated _____

Base Bid Proposal for General Construction:

DOLLARS (\$) \_\_\_\_\_ )

*(Arkansas public bid statutory requirement: Bidder must enter bid amount in numerical format)*

00 42 13-1

Washington County  
Sheriff's Office Interior Remodel  
Fayetteville, Arkansas

COMPLETION TIME:

The Contractor agrees, if awarded the contract to complete project within **Seventy-five (75)** **Calendar Days** after the date noted in the Notice to Proceed.

Liquidated damages in the amount of Five Hundred Dollars (\$500.00) per calendar day for delay beyond that time will be paid by the Contractor except for extensions of time granted under the General and Supplementary Conditions.

In submitting this bid, it is understood that the right is reserved by the Owner to reject any or all bids. No bid shall be withdrawn for a period of thirty (30) days subsequent to the opening of bids without the consent of the Owner.

In submitting this bid I/We acknowledge and include Cash Allowance costs as part of the Base Bid as listed in Specification Section 01 21 13.

I (or we) submit the names of the subcontractors I (or we) propose to use, and the State Contractors' License Number (If Applicable), as follows:

SUBCONTRACTORS NAME

STATE CONTRACTOR'S  
LICENSE NO.

A. Plumbing

---

Is the amount of the Plumbing work \$50,000.00 or more? Yes\_\_\_\_ No\_\_\_\_  
If yes, list plumbing subcontractor and license number above.

---

B. Mechanical

---

Is the amount of the Mechanical work \$50,000.00 or more? Yes\_\_\_\_ No\_\_\_\_  
If yes, list mechanical subcontractor and license number above.

---

C. Electrical

---

Is the amount of the Electrical work \$50,000.00 or more? Yes\_\_\_\_ No\_\_\_\_  
If yes, list electrical subcontractor and license number above.

---

Item A. and B. may be separate or combined under one mechanical contract, if so stated above.  
(Arkansas public bid statutory requirement: Bidder must enter subcontractors name in blanks above along with license number unless amount of subcontract is less than \$20,000.00.)

00 42 13-2

CONDITIONS:

- A. It is agreed that if awarded the Contract, a period of time not to exceed thirty (30) days shall be allowed the Owner in which to determine the manner in which to award or not award the contract.
- B. It is further agreed that if awarded the contract, the undersigned will execute the contract and commence work within Seven (7) calendar days, and will fully complete the work ready to use, not later than the time stipulated.

DECLARATION:

- A. The Undersigned hereby declares that he has carefully examined the Invitation and Instructions for Proposals, the Drawings and Specifications, has visited the actual location of the work and has consulted his sources of supply, and has satisfied himself as to all quantities and conditions, and understands that in signing this proposal, he waives all right to pleas of any misunderstanding regarding the same.
- B. Bidders are highly encouraged to attend the formal pre-bid meeting and walk-through of the project at the date and time as listed in Section 00 11 16 "Invitation to Bid" and that the bidder familiarize himself/herself with the existing building, review existing conditions, and that his bid reflects same.**

FIRM

---

BY

---

*(Arkansas public bid statutory requirement: Bidder must sign in space provided above)*

PRINTED NAME & TITLE

---

TITLE

---

DATE

---

NOTE: If bidder is a corporation, indicate state of incorporation, under the Firm's Signature, and if a partnership, give full names of all partners.

Arkansas State Contractor's License No.

*(Arkansas public bid statutory requirement: Bidder must provide current State Contractor's number)*

---

00 42 13-3

## SECTION 00 72 00

### GENERAL CONDITIONS OF THE CONTRACT

#### PART 1 GENERAL

##### 1.1 SCOPE OF WORK

- A. The work included under these Specifications consists of furnishing all items, materials, operations, or methods listed, mentioned, indicated, or scheduled on the drawings and/or in these Specifications, including all labor, materials, equipment, transportation, temporary facilities, services and incidental necessary and required for the construction and completion of the project named in the title page in accordance with contract documents.

##### 1.2 FORM OF SPECIFICATIONS

- A. General Conditions and Division 1 (General Requirements) apply to every Division (1 through 33 of these Specifications.
- B. These Specifications are of abbreviated form and contain incomplete sentences. Omissions of words or phrases such as “the Contractor shall” “shall be”, “as noted on the drawings”, “according to the drawings”, “a”, “an”, “the”, and “all” are intentional. Omitted words and phrases shall be supplied by inference in the same manner as they are when a “note” occurs on the drawings.
- C. All specification instructions are directed to the Contractor and the inclusion of any work by mention, note, or itemization, however brief, implies the Contractor shall provide same, unless specifically directed otherwise. Where a specific Contractor is named, he shall be responsible for and provide work so designated.
- D. In specifying an item by manufacturer’s name and/or catalog number, such item is to be provided complete with all the standard devices and accessories as indicated in the latest edition of the manufacturer’s catalog or brochure published at date of invitation to submit proposal, unless specifically stated otherwise.

##### 1.3 AIA GENERAL CONDITIONS

- A. AIA Document A201-2017:  
“GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION”, 2017 EDITION, 15 Articles, hereinafter referred to as the “AIA General Conditions”, is hereby made a part of this specification, a copy of which is herein attached. Contractor shall consult this document and become intimately familiar with its contents before submitting his proposal.

END OF SECTION

00 72 00-1

# **AIA® Document A201® – 2017**

## **General Conditions of the Contract for Construction**

### **for the following PROJECT:**

*(Name and location or address)*

Washington County Sheriff's Office Interior Remodel  
Fayetteville, Arkansas

### **THE OWNER:**

*(Name, legal status and address)*

Washington County, AR  
Fayetteville, Arkansas

### **THE ARCHITECT:**

*(Name, legal status and address)*

Hight Jackson Associates PA  
Rogers, Arkansas

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### **ADDITIONS AND DELETIONS:**

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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™, 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 written protocols governing the transmission and use of, and reliance on, Instruments of Service or any other information or documentation in digital form.

### § 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 written protocols governing the use of, and reliance on, the information contained in the model 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.

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§ 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 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;

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- .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 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**

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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.

#### § 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

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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

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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 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

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- .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 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 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 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 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 dispute resolution proceedings but, in such event, mediation shall proceed in advance of 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.

§ 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 dispute resolution. If such a demand is made and the party receiving the demand fails to file for dispute resolution within 60 days after receipt thereof, then both parties waive their rights to 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.

*(Paragraphs deleted)*



# AIA® Document A101® – 2017 Exhibit A

## Insurance and Bonds

This Insurance and Bonds Exhibit is part of the Agreement, between the Owner and the Contractor, date to be determined  
(In words, indicate day, month and year.)

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

Washington County Sheriff's Office Interior Remodel  
1155 W. Clydesdale Drive

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

Washington County, AR  
281 N. College Ave  
Fayetteville, AR 72701

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

To be determined

### TABLE OF ARTICLES

- A.1 GENERAL**
- A.2 OWNER'S INSURANCE**
- A.3 CONTRACTOR'S INSURANCE AND BONDS**
- A.4 SPECIAL TERMS AND CONDITIONS**

#### ARTICLE A.1 GENERAL

The Owner and Contractor shall purchase and maintain insurance, and provide bonds, as set forth in this Exhibit. As used in this Exhibit, the term General Conditions refers to AIA Document A201™–2017, General Conditions of the Contract for Construction.

#### ARTICLE A.2 OWNER'S INSURANCE

##### § A.2.1 General

Prior to commencement of the Work, the Owner shall secure the insurance, and provide evidence of the coverage, required under this Article A.2 and, upon the Contractor's request, provide a copy of the property insurance policy or policies required by Section A.2.3. The copy of the policy or policies provided shall contain all applicable conditions, definitions, exclusions, and endorsements.

##### § A.2.2 Liability Insurance

The Owner shall be responsible for purchasing and maintaining the Owner's usual general liability insurance.

#### ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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

This document is intended to be used in conjunction with AIA Document A201®–2017, General Conditions of the Contract for Construction. Article 11 of A201®–2017 contains additional insurance provisions.

**§ A.2.3 Required Property Insurance**

**§ A.2.3.1** Unless this obligation is placed on the Contractor pursuant to Section A.3.3.2.1, the Owner shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, property insurance written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis. The Owner's property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The property insurance shall be maintained until Substantial Completion and thereafter as provided in Section A.2.3.1.3, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees.

**§ A.2.3.1.1 Causes of Loss.** The insurance required by this Section A.2.3.1 shall provide coverage for direct physical loss or damage, and shall not exclude the risks of fire, explosion, theft, vandalism, malicious mischief, collapse, , or windstorm. The insurance shall also provide coverage for ensuing loss or resulting damage from error, omission, or deficiency in construction methods, design, specifications, workmanship, or materials.

**§ A.2.3.1.2 Specific Required Coverages.** *The insurance required by this Section A.2.3.1 shall provide coverage for loss or damage to falsework and other temporary structures, and to building systems from testing and startup. The insurance shall also cover debris removal, including demolition occasioned by enforcement of any applicable legal requirements, and reasonable compensation for the Architect's and Contractor's services and expenses required as a result of such insured loss, including claim preparation expenses.*

**§ A.2.3.1.3** Unless the parties agree otherwise, upon Substantial Completion, the Owner shall continue the insurance required by Section A.2.3.1 or, if necessary, replace the insurance policy required under Section A.2.3.1 with property insurance written for the total value of the Project that shall remain in effect until expiration of the period for correction of the Work set forth in Section 12.2.2 of the General Conditions.

**§ A.2.3.1.4 Deductibles and Self-Insured Retentions.** If the insurance required by this Section A.2.3 is subject to deductibles or self-insured retentions, the Owner shall be responsible for all loss not covered because of such deductibles or retentions.

**§ A.2.3.2 Occupancy or Use Prior to Substantial Completion.** The Owner's occupancy or use of any completed or partially completed portion of the Work prior to Substantial Completion shall not commence until the insurance company or companies providing the insurance under Section A.2.3.1 have consented in writing to the continuance of coverage. The Owner and the Contractor shall take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of insurance, unless they agree otherwise in writing.

NOTE: Builders Risk Policies commonly include some kind of occupancy exclusion. Agents would need to have that removed if the building is going to be occupied at any time during construction. EITHER INCLUDE OR ADVISE OWNER TO DISCUSS WITH INSURANCE.

THE CONTRACTOR SHALL MAINTAIN BUILDERS' RISK INSURANCE AND SHALL FILE CERTIFICATES OF INSURANCE WITH THE OWNER AS REQUIRED. The limits of such insurance shall be not less than the following:

1. Property Insurance (Builders' risk shall be purchased and maintained by the Contractor. Furnish Owner with a copy of the policy. Contractor shall notify Owner at least 15 days before policy is terminated.

#### **§ A.2.3.3 Insurance for Existing Structures**

If the Work involves remodeling an existing structure or constructing an addition to an existing structure, the Owner shall purchase and maintain, until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, "all-risks" property insurance, on a replacement cost basis, protecting the existing structure against direct physical loss or damage from the causes of loss identified in Section A.2.3.1, notwithstanding the undertaking of the Work. The Owner shall be responsible for all co-insurance penalties.

*(Paragraphs deleted)*

#### **ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS**

##### **§ A.3.1 General**

**§ A.3.1.1 Certificates of Insurance.** The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article A.3 at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section A.3.2.1 and Section A.3.3.1. The certificates will show the Owner as an additional insured on the Contractor's Commercial General Liability and excess or umbrella liability policy or policies.

Init.

**§ A.3.1.2 Deductibles and Self-Insured Retentions.** The Contractor shall disclose to the Owner any deductible or self-insured retentions applicable to any insurance required to be provided by the Contractor.

**§ A.3.1.3 Additional Insured Obligations.** To the fullest extent permitted by law, the Contractor shall cause the commercial general liability coverage to include (1) the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. To the extent commercially available, the additional insured coverage shall be no less than that provided by Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's consultants, CG 20 32 07 04.

**§ A.3.1.4 Waiver of Subrogation** the Commercial General Liability and Automobile Liability policies shall each contain a waiver of subrogation in favor of the Owner, Architect, and their officers, directors, Board Members, employees and agents.

**§ A.3.1.5 Subcontractors,** Contractor shall cause each subcontractor to purchase and maintain insurance of the types and amounts specified as a minimum. Limits of such coverage may be reduced only upon written agreement of Owner. Contractor shall provide to the Owner copies of certificates evidencing coverage for each subcontractor. Subcontractor's commercial general liability and business automobile liability insurance shall name Owner and Architect as additional insured and have the Waiver of subrogation endorsement added in accord with Article A.3.

**§ A.3.1.6** These certificates and the insurance policies required by this Article A.3 shall contain a provision afforded under the policies will not be canceled or allowed to expire until at least 30 days prior written notice has been given to the Owner. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

**§ A.3.1.7** Failure to file certificates or acceptance by the Owner or Architect of certificates of insurance which do not indicate the specified coverage shall in no way relieve the contractor of his responsibility for maintaining insurance as specified above.

#### **§ A.3.2 Contractor's Required Insurance Coverage**

**§ A.3.2.1** The Contractor shall purchase and maintain the following types and limits of insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

*(If the Contractor is required to maintain insurance for a duration other than the expiration of the period for correction of Work, state the duration.)*

#### **§ A.3.2.2 Commercial General Liability**

**§ A.3.2.2.1** Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than One Million Dollars (\$ 1,000,000.00 ) each occurrence, Two Million Dollars (\$ 2,000,000.00 ) general aggregate, and Two Million Dollars (\$ 2,000,000.00 ) aggregate for products-completed operations hazard, providing coverage for claims including

- .1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;
- .2 personal injury and advertising injury;
- .3 damages because of physical damage to or destruction of tangible property, including the loss of use of such property;
- .4 bodily injury or property damage arising out of completed operations; and
- .5 the Contractor's indemnity obligations under Section 3.18 of the General Conditions.



**§ A.3.2.2.2** The Contractor's Commercial General Liability policy under this Section A.3.2.2 shall not contain an exclusion or restriction of coverage for the following:

- .1 Claims by one insured against another insured, if the exclusion or restriction is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim.
- .2 Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor.
- .3 Claims for bodily injury other than to employees of the insured.
- .4 Claims for indemnity under Section 3.18 of the General Conditions arising out of injury to employees of the insured.
- .5 Claims or loss excluded under a prior work endorsement or other similar exclusionary language.
- .6 Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language.
- .7 Claims related to residential, multi-family, or other habitational projects, if the Work is to be performed on such a project.
- .8 Claims related to roofing, if the Work involves roofing.
- .9 Claims related to exterior insulation finish systems (EIFS), synthetic stucco or similar exterior coatings or surfaces, if the Work involves such coatings or surfaces.
- .10 Claims related to earth subsidence or movement, where the Work involves such hazards.
- .11 Claims related to explosion, collapse and underground hazards, where the Work involves such hazards.

**§ A.3.2.3** Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, with policy limits of not less than One Million Dollars (\$ 1,000,000.00 ) per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage.

**§ A.3.2.4** The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella insurance policies result in the same or greater coverage as the coverages required under Section A.3.2.2 and A.3.2.3, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

**§ A.3.2.5** Workers' Compensation at statutory limits.

**§ A.3.2.6** Employers' Liability with policy limits not less than One Million Dollars (\$ 1,000,000.00 ) each accident, One Million Dollars (\$ 1,000,000.00 ) each employee, and One Million Dollars (\$ 1,000,000.00 ) policy limit.

**§ A.3.2.7** Jones Act, and the Longshore & Harbor Workers' Compensation Act, as required, if the Work involves hazards arising from work on or near navigable waterways, including vessels and docks

**§ A.3.2.8** If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than One Million Dollars (\$ 1,000,000.00 ) per claim and One Million Dollars (\$ 1,000,000.00 ) in the aggregate.

**§ A.3.2.9** Contractor shall procure Pollution Liability insurance, with policy limits of not less than One Million Dollars (\$ 1,000,000.00 ) per claim and One Million Dollars (\$ 1,000,000.00 ) in the aggregate.

*(Paragraphs deleted)*

**§ A.3.3 Contractor's Other Insurance Coverage**

**§ A.3.3.1** Insurance selected and described in this Section A.3.3 shall be purchased from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

*(If the Contractor is required to maintain any of the types of insurance selected below for a duration other than the expiration of the period for correction of Work, state the duration.)*

**§ A.3.3.2** The Contractor shall purchase and maintain the following types and limits of insurance in accordance with Section A.3.3.1.

*(Select the types of insurance the Contractor is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. Where policy limits are provided, include the policy limit in the appropriate fill point.)*

☒ **§ A.3.3.2.1** Property insurance of the same type and scope satisfying the requirements identified in Section A.2.3, which, if selected in this section A.3.3.2.1, relieves the Owner of the responsibility to purchase and maintain such insurance except insurance required by Section A.2.3.1.3 and Section A.2.3.3. The Contractor shall comply with all obligations of the Owner under Section A.2.3 except to the extent provided below. The Contractor shall disclose to the Owner the amount of any deductible, and the Owner shall be responsible for losses within the deductible. Upon request, the Contractor shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle the loss with the insurer and be the trustee of the proceeds of the property insurance in accordance with Article 11 of the General Conditions unless otherwise set forth below:

*(Where the Contractor's obligation to provide property insurance differs from the Owner's obligations as described under Section A.2.3, indicate such differences in the space below. Additionally, if a party other than the Owner will be responsible for adjusting and settling a loss with the insurer and acting as the trustee of the proceeds of property insurance in accordance with Article 11 of the General Conditions, indicate the responsible party below.)*

☒ **§ A.3.3.2.4** Insurance for physical damage to property while it is in storage and in transit to the construction site on an "all-risks" completed value form.

☒ **§ A.3.3.2.5** Property insurance on an "all-risks" completed value form, covering property owned by the Contractor and used on the Project, including scaffolding and other equipment.

☐ **§ A.3.3.2.6 Other Insurance**  
*(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)*

Coverage

Limits

**§ A.3.4 Performance Bond and Payment Bond**

*(Paragraphs deleted)*

Payment and Performance Bonds shall be AIA Document A312™, Payment Bond and Performance Bond, or contain provisions identical to AIA Document A312™, current as of the date of this Agreement.

Init.

**§ A.3.4 Revised Language:**

Contractor shall pay premium for and furnish Two (2) copies of a Performance Bond, and a Labor and Material Payment Bond in full amount of the contract sum to cover faithful performance of the contract and payment of all obligations arising thereunder, within seven (7) calendar days after signing contract. Furnish bonds in accordance with application laws of the State of Arkansas. Labor and Material Payment Bond coverage for project shall be maintained for a period of not less than one (1) year after substantial completion. A Warranty Bond shall be furnished in full amount of the contract sum to cover faithful performance of the contract and payment of all obligations for an additional year beyond Labor and Material Payment Bond coverage.

**§ A.3.4.1** Furnish Owner, through the Architect, with two (2) copies each of required bonds.

**§ A.3.4.2** Furnish Owner, through the Architect, with two (2) copies of the signed "Contractor's and Resident Local Agents Affidavit of Qualification, attached.

**§ A.3.4.3** The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy.

**ARTICLE A.4 SPECIAL TERMS AND CONDITIONS**

Special terms and conditions that modify this Insurance and Bonds Exhibit, if any, are as follows:

None



## SECTION 00 73 00

### SUPPLEMENTARY GENERAL CONDITIONS

#### PART 1 SUPPLEMENTARY GENERAL CONDITIONS

##### 1.1 GENERAL

- A. Where any Articles of the AIA General Conditions Document A201-2017 are supplemented hereby, the provision of such Articles remains in effect with supplemental provisions added thereto. Where any Article is amended, voided or superseded hereby, the provisions of such article that are not so amended voided or superseded remain in effect.
- B. Where provisions of the General Conditions relate in general to the work of the Contractor and Subcontractor, these paragraphs are modified in Division 1, GENERAL REQUIREMENTS of the specifications.
- C. Should conflict occur between these Special Provisions and the General Conditions, the requirements of the Special Provisions shall take precedence.

#### PART 2 AMENDMENTS TO THE GENERAL CONDITIONS

##### ARTICLE 1 GENERAL PROVISION

Add the following paragraphs:

- 1.1.7.1 Contractor who is awarded the project will be furnished free of charge the following number of sets of working drawings and specifications, including all modifications thereof:

General Contractor	6 sets
Mechanical Contractor	1 set
Electrical Contractor	1 set
Plumbing Contractor	1 set
- 1.1.7.3 Accompanying these Specifications are Drawings, which jointly with these Specifications are intended to explain each other and describe and coordinate the work to be performed under Contract.

Add the following paragraphs:

- 1.2.2.1. The Specifications are divided and the Drawings are numbered, each under headings set forth in the Specifications Index and in the Enumeration of Drawings below, such headings indicating the division of responsibility between contracts. The General Contract includes all work indicated under the headings ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING. However, the divisions created by the above headings shall not alleviate any contractor or

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subcontractor from work to be performed by him that is specifically indicated by the Drawings or in the division of Specifications of other contracts, for each contractor shall fully familiarize himself with all of the drawings and specifications for this project before submitting his proposal.

- 1.2.4. Should a discrepancy be found among the contract documents, request interpretation from the Architect, before proceeding with the work. Should an error, inconsistency or omission later be found in the drawings or specifications, or between drawings and specifications, or between drawing divisions, Contractor is deemed to have estimated on the more expensive way of doing work unless he shall have asked for and obtained a written decision before submission of proposal as to which method of materials will be required. Contractor shall notify Architect if any of these situations occur, and gain approval before proceeding. Reference used in these specifications to the Architect shall mean Hight-Jackson Associates PA.
- 1.2.5. Before submitting his proposal, each bidder shall check his set(s) of Specifications and Drawings and advise the Architect if any sheets are missing.
- 1.2.6. Do not scale drawings for dimensions. Accurately lay out such work from dimensions indicated on architectural drawings unless such is found in error. Consult Architect for any interpretations concerning locations of equipment.
- 1.2.7. If there is a discrepancy between drawings and specifications, consult Architect for clarification. Otherwise the more stringent requirement shall take precedent.
- 1.2.8. Consult Drawings for miscellaneous items of each trade and provide same as indicated.

Add the following paragraphs:

- 1.4.1 When a word, such as “approved”, “proper”, “satisfactory”, “alternate”, and “as directed” is used, it implies such reference is to the architect’s specific approval and directions.
- 1.4.2 “Provide” means furnish and install.

Edit the following paragraph:

- 1.7 Digital Data Use Transmission, revise AIA Document E203-2013 to C106-2013

Add the following paragraph:

- 1.7.1 Electronic Drawing Files: After project is awarded, electronic “read-only” drawing files will be available to the General Contractor, Sub-contractors, and / or vendors to prepare shop drawings, etc., for a cost of \$100.00 total for the first Ten (10) sheets and \$10.00 each for any additional sheets. An electronic drawing file release form will be submitted for signature and pre-payment of all costs will be required before any

drawing files are released. Checks are to be made payable to Hight-Jackson Associates PA. Please contact Jorge Andrade at (479) 464-4965 for all requests.

Delete the following paragraph:

1.8 Building Information Models Use and Reliance to be deleted in its entirety.

## ARTICLE 2 OWNER

Add the following sentence:

2.3.2 Paragraph 2.3.2 is modified with the following addition: Where the word “Architect” appears in each Division of the Specifications, it refers to the Architect or to the Owner as applicable

## ARTICLE 3 CONTRACTOR

Add the follow subparagraphs:

- 3.3.4 Contractor notify his Subcontractors, Owner, and all Contractors and Subcontractors under the Owner when he is ready for them to install their portions of the work and see that they comply with any reasonable period of time. Neither enclose nor cover any piping, wiring ducts, equipment or other items until proper tests and inspection have been made by Architect and/or proper authorities.
- 3.3.5 Notify Architect to inspect any work when placing of subsequent work would prevent observation of previous work.
- 3.3.6 Contractor shall take charge of and assume general responsibility for proper protection of building during construction. He shall further provide substantial enclosures at all openings as necessary for protection, including doors with locks.
- 3.3.7 Each Contractor assumes responsibility for his materials stored on the premises.
- 3.4.1 ORDERS FOR MATERIALS. Paragraph 3.4.1.is modified with the following additions:
  - 3.4.1.1 Place material orders immediately following materials submittal approval. Furnish evidence of orders to Architect upon request.
  - 3.4.1.2 Place orders contingent upon selection of colors and finishes, approval of shop drawings and samples by Architect.
  - 3.4.1.3 Include with monthly request for payment and progress schedule a report of materials purchased and date materials are scheduled for delivery.

Add the following paragraphs:

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- 3.4.2 Paragraph is modified with the addition: Proposals for substitutions of material, equipment, or methods shall be submitted no later than thirty days from date of written Notice to Proceed, authorizing performance of the Contract. Include a list of all materials, which he proposes to substitute for materials specified. Proposals for substitution shall be accompanied by such technical data, as the Architect may need in order to compare the proposed material with the material that was specified. No substitutions shall be made until written permission is given by the Architect at the direction of the Owner.
- 3.4.4 Where a material is mentioned in the Specifications by trade name or manufacturer's name, the same is not preference for said material, but the intention of using said name is to establish a type of quality of material. Material of other trade names or of other manufacturers which is in the opinion of the architect, equivalent or better in type or quality will be accepted by the Architect on behalf of the Owner only as provided in Section 01 60 00.
- 3.4.5 Before submitting proposal, Contractor, his Subcontractors and Material Suppliers observe Drawings and Specifications, and should any material and/or its installation be indicated or specified in a manner not approved by the Material Manufacturer, or specified item has been discontinued, notify Architect and receive his instructions. The Contractor shall provide other equivalent materials suitable for the installation as selected by Architect, or if not discovered until after installation. Contractor shall replace materials with such other equivalent suitable and selected materials, and in either event, at no added cost to Owner.

Add the following paragraphs:

- 3.5.1.1 Warranty all work to be free from defects in materials and workmanship for a period of one year from the date of Substantial Completion, except where a different time period is specifically prescribed. Contractor will promptly correct such defects to the state of condition originally required by the contract documents at contractor's expense.
- 3.5.1.2 Warranty period for all equipment and material shall not begin until the date of Substantial Completion. Contractor will promptly correct such defects to the state of condition originally required by the contract documents at contractor's expense during the warranty period.
- 3.5.2.1 When, at any time during the warranty period, work is considered defective by either Owner or Architect, immediately:
- A. Place such defective work into satisfactory condition, free from faults and defects and in conformance with contract requirements.
  - B. Make good all damage to work, including contents thereof and grounds, developing within warranty period when such damage is due to use of materials and labor not conforming to contract requirements.

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- C. Make good all work disturbed in fulfillment of contract obligations during warranty period. If work of other contractors is disturbed in the process of fulfilling contract, restore such work to its original condition and warranty such restored work.
- 3.5.3 Upon failure by contractor to proceed promptly to comply with terms of any warranty under the contract, Owner shall have such work performed as necessary to fulfill warranties, and contractor shall pay Owner such sums as expended to fulfill such warranty.
- 3.5.4 Work required for fulfillment of warranties embraced under the contract shall be performed at no additional expense to Owner.
- 3.5.5 Unless other specifically prescribed in warranty, normal wear and tear and results of accidents not chargeable to contractor are excluded from the requirements of this Article.
- 3.5.6 Prior to expiration of the one-year warranty period, the Architect will conduct an inspection of the project and create a punch list for items found to be deficient. Contractor will be required to be present. The Architect will set a date by which the deficient items are to be corrected. Contractor will return punch list to Architect, initialing completed each completed item. Note that contractor will remain responsible for repair and or replacement of items with warranties extending beyond one year as called for in individual specification sections or on drawings.

Add the following paragraph:

- 3.6.1 Materials and equipment incorporated into this project will be required to follow the Guidelines of Arkansas Sales Tax and such taxes shall be included in bidder's proposals. Contractors shall include Social Security Taxes, State Unemployment compensation Insurance and all other items of like nature.

Add the following paragraphs:

- 3.9.1.1 The superintendent shall be employed as full time and be in attendance at the project site during performance of the work. Superintendent shall have a minimum of 10 years of construction experience. Five (5) years of that experience shall have been in the capacity of a project superintendent on similar type projects. If the superintendent is unknown to the Architect, a resume shall be submitted for review and approval to qualify in this capacity. The Owner retains the right to accept or reject proposed superintendent prior to signing of contract. General Contractors not having such a person available for the project are discouraged from bidding project.
- 3.9.4 The superintendent assigned to the project at the beginning of construction will remain as superintendent for the entire duration of construction period. The superintendent shall provide duties per general conditions and remain on site for the entire duration of the project, including completion of all punch list items. The only circumstances that would permit replacement of the superintendent are prolonged illness, resignation of

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the superintendent from the company, or death. If one of the preceding circumstances should occur, the Contractor shall state in writing to the Owner the reason for replacement, send qualification statement of the proposed project superintendent, and obtain approval from the Owner and Architect. The replacement superintendent shall possess the minimum requirements set forth in paragraph 3.9.2.

- 3.15.1.2 The Contractor shall replace broken or scratched glass, clean fixtures, remove dust, dirt, spots, marks, labels, stains, foreign paint and other blemishes from all finish work, unless more exactly specified, clean all floors and floor coverings, clean and polish hardware.

#### ARTICLE 4. ARCHITECT

- 4.1.1 Paragraph 4.1.1 is modified with the following addition: Where the word “Architect” appears in each Division of the Specifications, it refers to the Architect or to the Owner as applicable.

#### ARTICLE 5. SUBCONTRACTORS

Paragraph 5.2.2 of the General Conditions Add the following:

- 5.2.2.1.1 Submit list of proposed subcontractors to Architect prior to, or at time of pre-construction conference. Subcontractors listed shall not be released from their contract or replaced without notification and approval of Owner.

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

Add the following paragraph:

- 6.2.6 Contractor shall assume general coordination and direction of the project. Each Contractor shall cooperate with other Contractors on the Work and install his work in sequence to facilitate and not delay the installation of such other contractors. The Architect is neither the coordinator nor the expeditor of the work of the various contractors.

#### ARTICLE 7. CHANGES IN THE WORK

- 7.3.3 Delete in its entirety and substitute the following:

- 7.3.3 The value of any extra work or change performed by Contractor using his own forces shall be determined in one or more of the following ways:
1. By estimate and acceptance of a lump sum, computed as follows:
    - a. Net cost of materials.
    - b. State and local sales tax.
    - c. Net placing cost.
    - d. W.C. insurance premium and FICA tax.
    - e. Overhead and profit, 15% x (a + b + c + d).

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- f. Allowable bond premium.
- g. Total Cost = a + b + c + e + f.

Credit for work omitted, which was included in original contract, shall be computed on the same basis, except that Contractor may retain 7% of overhead and profit percentage, computed on above basis.

- 2. By unit prices named in contract or subsequently agreed upon. (Unit price will include contractor's profit and overhead, insurance and bond, and quantification of amount of material by third party.)
- 3. By cost and percentage or by cost and a fixed fee, to be computed according to above formula.

Contractor shall be required, if called upon, to furnish original bills and payrolls and support of statement with proper affidavits. Burden of proof of costs rests upon Contractor.

Add the following paragraph:

- 7.3.3.1 The value of any such extra work or change performed by a subcontractor shall be determined by the subcontractor computing his cost as outlined in subparagraph 7.3.3 (a. through e.), to which cost the Contractor shall add an overhead and profit charge of 5% plus allowable bond premium.

## ARTICLE 8. TIME

- 8.1.2 Delete: "The date of commencement of the Work is the date established in the Agreement" and add the following:  
Add: "The date of commencement of the Work is the date established in the written Notice to Proceed. Do not begin work prior to receipt of written Notice to Proceed authorizing performance of the contract. The official Notice to Proceed will be issued by the Owner."
- 8.3.1 Delete the words "unusual delay in deliveries, unavoidable casualties".
- 8.3.1 Paragraph 8.3.1 of the GENERAL CONDITIONS is amended with addition of the following paragraphs:
  - 8.3.1.1 Extension of time for completion of the work on account of rainfall, snow, or cold weather during the contract time will be subject to approval by the Architect and as provided in Section 01 29 76. Request for extension of time is to be submitted with each Request for Payment. Request for extension of time is to be submitted in writing within Thirty (30) days of the occurrence. If Contractor fails to submit request, time extension will not be approved for the pay period.

- 8.3.1.2 If it is not possible to obtain certain materials when needed and the Contractor submits evidence that he issued purchase orders and/or subcontracts immediately following execution of the Contract with the Owner and that he and his subcontractors have made every reasonable effort to obtain the materials when or before needed, delays in completion due to inability to obtain such materials will be acknowledged as being “beyond the Contractor’s control”.
- 8.3.2 Add the following paragraphs:  
Any claim for extension of time shall be made in writing to the Owner/Architect not more than Seven (7) days after commencement of the delay, otherwise, it shall be waived. In case of a continuing delay only one claim is necessary. In case of claims for extensions of time because of adverse weather, such extensions of time shall be granted only when such adverse weather prevented the execution of major items of Work as defined in paragraph 8.3.2.4 on normal working days and exceeds the number of anticipated days. The following are considered reasonable anticipated days of adverse weather on a monthly basis and shall be included in the contract time.
- |          |         |           |        |
|----------|---------|-----------|--------|
| January  | 11 days | July      | 6 days |
| February | 10 days | August    | 6 days |
| March    | 8 days  | September | 4 days |
| April    | 7 days  | October   | 5 days |
| May      | 5 days  | November  | 7 days |
| June     | 6 days  | December  | 8 days |
- 8.3.2.3 Adverse weather days, beyond each of the monthly totals will be allowed to extend contract time, without additional cost, only if approved and authorized by the Architect, and the Owner.
- 8.3.2.4 An adverse weather day is defined as a day where at least four (4) hours of work on a principal unit of work (critical path) underway, between the hours of 7:00 AM and 6:00 PM cannot be completed because of weather conditions beyond control of the contractor.
- 8.3.2.5 Extension of time will be subjected to approval by the Owner/Architect and as provided in Section 01 29 76.

## ARTICLE 9. PAYMENTS AND COMPLETION

- 9.3.1 Paragraph 9.3.1 of the General Conditions is deleted. Add the following:
- 9.3.1 On or before the date established for submittal of each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment for operations prepared in accordance with the schedule of values. Such application shall be notarized and supported by data supporting the Contractors’ right to payment such as copies of requisitions from Subcontractors and materials suppliers, and reflecting retainage if provided for elsewhere in the Contract Documents. Refer to Section 01 29 76 for additional provisions.

9.3.1.1 Paragraph 9.3.1.1 of the General Conditions is deleted.

Add the following Subparagraph:

9.3.1.1 In making partial payments for the work, there shall be retained **Five (5%) percent** of the estimated amount for labor and materials until final completion and acceptance of all work covered in the contract. Retainage shall be paid to the Contractor in the final payment if all conditions of the contract documents have been met.

9.3.2 Paragraph 9.3.2 is modified with the following addition:

9.3.2.1 **PAYMENT APPLICATIONS FOR MATERIALS STORED OFF SITE.**  
Payments will only be processed for materials stored off site that are stored in a bonded warehouse. Payment claims for materials stored off site must be accompanied with an itemized list of materials establishing value, proof that the materials are insured, and a receipt of storage from a bonded warehouse. Upon payment of materials stored, title to the material shall be to the Owner. All expenses incurred in storage of materials will be paid by the Contractor.

9.6 Section 9.6 is amended with the following addition:

9.6.9 **LIQUIDATED DAMAGES.** If the Contractor fails to complete the work within the time agreed in this contract, or any agreed extension thereof, he shall pay to the Owner as liquidated damages, fixed or agreed, and not as a penalty, the sum as stipulated on Proposal Form for each calendar day of delay of the work, which sum shall be withheld by the Owner from payments due to be made to the Contractor by the Owner under the terms of the contract.

9.8.1 The date of substantial completion of the work or designated portion thereof is the date certified by the Architect when construction is sufficiently complete in accordance with the Contract Documents, so the Owner can occupy or utilize the work or designated portion thereof for the use for which it is intended without sacrificing the quality of services or having to significantly modify operations from intended usage as per design, as expressed in the Contract Documents.

Delete Paragraphs 9.8.2 through 9.8.5 and replace with the following paragraphs:

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. The contractor shall notify Architect ten (10) days prior to the date on which the building will be ready for final inspection. The Contractor shall proceed promptly to complete and correct items on his list. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Document and ready for Architect/Engineer's final punch. Provide submittals to Architect / Engineer that are required by any governing body or other authorities. Upon receipt of the Contractor's list, the Architect will

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perform a punch and determine by observation whether the Work or designated portion thereof is substantially complete. Failure to include an item on the final list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Significant amounts of incomplete work found during the inspection shall be grounds for ceasing the inspection. Minor adjustments and corrections to work shall not be considered cause for discontinuing final inspection. When the Architect determines that Work or designated portion thereof is substantially complete, he will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, insurance, subsequent damage to the Work. Should all work not be completed at the time substantial completion is set, the Certificate of Substantial Completion shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

- 9.8.3 Upon Substantial Completion of the Work or designated portion thereof, receipt of closeout documents called for in Section 01 77 00 and upon final application by the Contractor and certification by the Architect, the Owner shall make payment, reflecting adjustment in retainage, if any, for such Work or portion thereof as provided in the Contract Documents. The final application for payment will not be approved for payment by the Architect until the "CLOSEOUT" documents are provided to and reviewed by the Architect by the Contractor. These documents are to be complete in every respect with no exclusions or exceptions. Closeout documents shall be delivered to the Architect no later than thirty (30) calendar days from Date of Substantial completion.

## ARTICLE 11 INSURANCE AND BONDS

Add the following paragraph:

- 11.6 Refer to AIA Document A101 - 2017 Exhibit A for additional Insurance and Bond requirements.

## ARTICLE 13 MISCELLANEOUS PROVISIONS.

- 13.1 Section 11.3 is amended as follows:  
The contract shall be governed by the law of the place where the project is located, excluding jurisdiction's choice of law.
- 13.4.1 Modify the last sentence as follows:  
The Contractor shall directly arrange for and the owner pay for tests, inspections, or approvals where building codes or applicable laws of regulations so require unless otherwise provided for in individual specification sections or on drawings.

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Second sentence - Change the beginning of the statement “Unless otherwise provided” to read: “Unless otherwise provided for in individual specification sections or on drawings,”

- 13.4.4. The words “and Owner” shall be added to Subparagraph 13.5.4. The Owner shall have all of the rights which the Architect would have had under these changed Articles and Subparagraphs.

Add the following paragraph:

- 13.4.7 For soils testing and observation, contractors will be required to employ the services of the same geotechnical engineering company as that listed in Section 02 32 00, Earthwork. If no previous soils investigation has been performed, architect to approve Contractor’s intended selection prior to Notice-to-Proceed.

## ARTICLE 15. CLAIMS AND DISPUTES

Modify the following paragraphs:

- 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by date accompanying each payment request, 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 beyond anticipated weather days as stated in 8.3.2 of General Conditions.
- 15.3.2 Delete the last sentence of this paragraph.
- Add the following sentence:
- 15.3.4 If mediation proves unsuccessful the dispute will be handled in Washington County, AR, Court of Law.
- 15.4 ARBITRATION. All references to arbitration will be deleted from contract document AIA 201 General Conditions of the Contract for Construction, and specifically paragraphs 15.4.1; 15.4.1.1; 15.4.2; 15.4.3; 15.4.4; 15.4.4.1; 15.4.4.2; 15.4.4.3.

END OF SECTION

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## SECTION 01 11 00

### SUMMARY OF WORK

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Contract Description.
- B. Description of the work.
- C. Owner supplied Products.
- D. Contractor use of site and premises.
- E. Future work.
- F. Work sequence.
- G. Site security and encumbrances.
- H. Owner occupancy.
- I. Permits and fees

##### 1.2 CONTRACT DESCRIPTION

- A. Contract Type: Stipulated Price, AIA document A101-2017.

##### 1.3 DESCRIPTION OF THE WORK

- A. The work under this contract will include all work as shown on drawings and specifications and shall include all work required to complete the project **with exception of the following:**
  - 1. Telephone and computer system (Other than conduit and junction boxes).
  - 2. Access control card reader (with exception of junction box and items as specified in Section 08 71 00).
  - 2. Toilet Accessories as stated in Section 10 28 13
- B. Contractor will remove and Owner will take possession of the following items prior to start of work:
  - 1. Doors not scheduled to be reused.
  - 2. Plumbing fixtures

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- C. Contractor is responsible for familiarizing himself with the entire project; for expediting and completing all phases of the project in accordance with the Contract Documents; and is solely responsible for work completed by other trades under his contract.
- D. Contractor is responsible for coordinating items furnished and installed by owner.

#### 1.4 OWNER SUPPLIED PRODUCTS

- A. Owner's Responsibilities:
  - 1. Arrange for and deliver Owner reviewed Shop Drawings, Product Data, and Samples, to Contractor.
  - 2. Arrange and pay for Product delivery to site.
  - 3. On delivery, inspect Products jointly with Contractor.
  - 4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
  - 5. Arrange for manufacturers' warranties, inspections, and service.
- B. Contractor's Responsibilities:
  - 1. Review Owner reviewed Shop Drawings, Product Data, and Samples. Verify owner supplied products fit where product is to be installed or placed.
  - 2. Receive and unload Products at site; inspect for completeness or damage jointly with Owner.
  - 3. Handle, store, install and finish Products.
  - 4. Repair or replace items damaged after receipt.
- C. Products supplied to site and installed by Owner's direct hire installer/contractor:
  - 1. Access Control System (all specified parts in 08 43 13 and 08 71 00 to be provided and installed by contractor)
  - 2. Furniture
- D. Items supplied by Owner for installation by Contractor:
  - 1. Restroom Accessories as stated in Section 10 28 13

#### 1.5 CONTRACTOR USE OF SITE AND PREMISES

- A. Limit use of site and premises to allow construction and remodeling in accordance with contract and construction documents.

#### 1.6 WORK SEQUENCE

- A. Construct Work in stages to accommodate Owner's occupancy requirements, stages to accommodate building phases during the construction period, coordinate construction schedule operations and stages with Owner.
- B. Properly prepare all work to receive subsequent work or finish. Notify Architect if any work is unsatisfactory to receive such subsequent work or finish and receive his instructions before proceeding. Failure to make such notification by trade applying work

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over unsatisfactory materials will constitute his acceptance or responsibility for making the necessary corrections.

- C. Contractor to take photographs of Critical areas of work and other items as deemed necessary when asked to do so by Architect/Engineer. Refer to Section 01 32 33.

#### 1.7 SITE SECURITY

- A. Contractor is responsible for securing the construction area at all times to prevent loss of property or injury to persons present at site. Such responsibility shall remain with the Contractor until all work is completed.

#### 1.8 ACCESS TO PROPERTY

- A. Building is secure at all times. Access for workmen and delivery of materials and equipment to immediate construction working areas within building is to be coordinated with the Owner. Provide unobstructed access to building areas required to remain in operation.
- B. Access by Contractor and his personnel through occupied portions of buildings is not permitted within the occupied building area except along designated routes verified by the Owner.

#### 1.9 OWNER OCCUPANCY

- A. Building will be occupied during performance of work, but areas of alterations will be vacated as required. Contractor shall take all measures and provide all material necessary for protecting existing equipment and property in affected areas of construction against dust and debris, so that equipment and affected areas to be used in Owner operations will not be hindered. Contractor shall permit access to Owner personnel through construction areas. Contractor to provide temporary means of protected access to all occupied areas of alteration during the construction period.

#### 1.10 PERMITS AND FEES

- A. Contractor to be responsible for verifying and obtaining written list of all permits, fees, etc. from local, county, state, and federal (if applicable) governing bodies that will apply to this project. Contractor is responsible for paying for these permits and fees.
- B. Building Permit - Contractor secure and pay for city building permit if required by City.
- C. Special Permits/Fees – Contractor and/or subcontractors shall be responsible for securing and paying for all special permits, licenses and fees that may be required by local, state, or federal laws as may be applicable to the review, installation or certification of their systems and materials or required for installation of such materials.

D. Connection Fees - Contractor and/or subcontractors shall be responsible for securing and paying for all fees and associated costs for review of, and connection to public utility services.

PART 2      PRODUCTS      Not Used.

PART 3      EXECUTION      Not Used.

END OF SECTION

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## SECTION 01 21 13

### CASH ALLOWANCES

#### PART 1 GENERAL

##### 1.1 SCOPE

- A. The following allowances are stated for the purpose of stabilizing each bid and for establishing an amount of credit to purchase the identified items. Each price stated shall include F.O.B. Job site delivery, tax included unless noted otherwise, but shall not include Contractor markup and installation as they are to be included in the bid and/or Contract. Cash Allowances Are to be included as part of the bid price.

##### 1.2 ALLOWANCE CREDIT

- A. Any unused allowance money will be returned to the owner. Unused materials shall be returned for credit, which will be given to the owner, after installation has been completed and accepted. When it is not economically practical to return material for credit, prepare and deliver all unusable material for storage by Owner. It will be the contractor's responsibility to dispose of unused material that the owner has indicated he does not want.

##### 1.3 ITEMS

- A. Section 08 71 00 - Finish Hardware
  - 1. Provide an allowance of **TWO THOUSAND DOLLARS (\$2,000.00)** for furnishing F.O.B. job site finish hardware, not including sales tax.
- B. Unforeseen Conditions
  - 1. Provide an allowance of **EIGHT THOUSAND DOLLARS (\$8,000.00)** for unforeseen conditions. Allowance is to be used by Owner and Architect. Allowance is to be tracked as a line item on the pay application. Any unused funds are to be returned to the Owner per final Change Order.

END OF SECTION

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## SECTION 01 26 00

### MODIFICATION REQUIREMENTS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Submittals.
- B. Documentation of change in Contract Sum/Price and Contract Time.
- C. Change procedures.
- D. Construction Change Directive.
- E. Stipulated Sum change order.
- F. Unit price change order.
- G. Time and material change order.
- H. Execution of change orders.
- I. Correlation of Contractor submittals.

##### 1.2 RELATED SECTIONS

- A. Document 00 72 00 - General Conditions - AIA: Governing requirements for changes in the Work, in Contract Sum/Price, and Contract Time.
- B. Document 00 73 00 - Supplementary General Conditions - AIA: Percentage allowances for Contractor's overhead and profit.
- C. Section 01 33 00 - Submittals: Schedule of values.
- D. Section 01 60 00 - Material and Equipment: Product options and substitutions.
- E. Section 01 77 00 - Contract Closeout: Project record documents.

##### 1.3 SUBMITTALS

- A. Submit the name of the individual authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.
- B. Change Order Forms: AIA G701. Change Order.

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#### 1.4 DOCUMENTATION OF CHANGE IN CONTRACT SUM/PRICE AND CONTRACT TIME

- A. Maintain detailed records of work done on a time and material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs of changes in the Work.
- B. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation.
- C. Provide additional data to support computations:
  - 1. Quantities of products, labor, and equipment.
  - 2. Taxes, insurance, and bonds.
  - 3. Overhead and profit.
  - 4. Justification for any change in Contract Time.
  - 5. Credit for deletions from Contract, similarly documented.
- D. Support each claim for additional costs, and for work done on a time and material basis, with additional information:
  - 1. Origin and date of claim.
  - 2. Dates and times work was performed, and by whom.
  - 3. Time records and wage rates paid.
  - 4. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

#### 1.5 CHANGE PROCEDURES

- A. The Architect/Engineer will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized by AIA A201, 2017 Edition, Paragraph 7.4 by issuing a Field Order, AIA Form G708, Supplemental Instructions, AIA Form G710 or Hight Jackson Associates Architect's Supplemental Instructions.
- B. The Architect/Engineer may issue a Proposal Request which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications and change in Contract Time for executing the change with a stipulation of any overtime work required. Contractor will prepare and submit an estimate within 10 calendar days unless instructed otherwise.
- C. The Contractor may propose a change by submitting a request for change to the Architect/Engineer, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time with full documentation. Document any requested substitutions in accordance with Section 01 60 00.

## 1.6 CONSTRUCTION CHANGE DIRECTIVE

- A. Architect/Engineer may issue a document, signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
- B. The document will describe changes in the Work and will designate method of determining any change in Contract Sum/Price or Contract Time.
- C. Promptly execute the change in Work.

## 1.7 STIPULATED SUM CHANGE ORDER

- A. Based on Proposal Request and Contractor's fixed price quotation or Contractor's request for a Change Order as approved by Architect/Engineer.

## 1.8 UNIT PRICE CHANGE ORDER

- A. For predetermined unit prices and quantities, the Change Order will be executed on a fixed unit price basis.
- B. For unit costs or quantities of units of work which are not predetermined, execute Work under a Construction Change Directive.
- C. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.

## 1.9 TIME AND MATERIAL CHANGE ORDER

- A. Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
- B. Architect/Engineer will determine the change allowable in Contract Sum/Price and Contract Time as provided in the Contract Documents.
- C. Maintain detailed records of work done on a Time and Material basis.
- D. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.

## 1.10 EXECUTION OF CHANGE ORDERS

- A. Execution of Change Orders: Architect/Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

## 1.11 CORRELATION OF CONTRACTOR SUBMITTALS

- A. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum/Price.
- B. Promptly revise progress schedules to reflect any change in Contract Time, revise sub schedules to adjust times for other items of work affected by the change and resubmit.
- C. Promptly enter changes in Project Record Documents.

PART 2 PRODUCTS Not Used.

PART 3 EXECUTION Not Used.

END OF SECTION

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## SECTION 01 29 76

### APPLICATIONS FOR PAYMENT

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for payment.

##### 1.2 RELATED SECTIONS

- A. Document 00 72 00 - General Conditions - AIA: Progress payments and final payments.
- B. Section 00 73 00 - Supplementary General Conditions
- C. Section 01 31 00 - Coordination and meetings:
- D. Section 01 32 36 – Construction Progress Schedules: Submittal procedures.
- E. Section 01 77 00 - Contract Closeout: Final payment.

##### 1.3 FORMAT

- A. AIA G702 - Application and Certificate for Payment and AIA G703 - Continuation Sheet.
- B. For each item, provide a column for listing each of the following:
  - 1. Item Number.
  - 2. Description of work.
  - 3. Scheduled Values.
  - 4. Previous Applications.
  - 5. Work in Place and Stored Materials under this Application.
  - 6. Authorized Change Orders Listed separately.
  - 7. Total Completed and Stored to Date of Application.
  - 8. Percentage of Completion.
  - 9. Balance to Finish.
  - 10. Retainage.

##### 1.4 PREPARATION OF APPLICATIONS

- A. Present required information in typewritten form or on electronic media printout.
- B. Execute certification by signature of authorized officer.
- C. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored Products.

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- D. List each authorized Change Order as an extension on AIA G703 - Continuation Sheet, listing Change Order number and dollar amount as for an original item of Work.
- E. Prepare Application for Final Payment as specified in Section 01 77 00.

#### 1.5 SUBMITTAL PROCEDURES

- A. Submit three copies of each Application for Payment.
- B. Submit three copies of **updated** construction schedules with each Application for Payment.
- C. Submit three copies of Certificate of Insurance for items stored off-site with each Application for Payment.
- D. Submit delays caused as a result of adverse weather, strikes, etc. Include backup with each pay application. Provide project superintendent's weather log for project with each pay application. If no delay days occurred during the last pay period provide statement on transmittal or letter stating that no delay days occurred. Delay days for Saturday and Sunday and Holidays will not be approved unless prior notice has been given and accepted by Architect. Approved delay days will not result in an increase in completion time unless days exceed anticipated delay days as set forth under Supplementary General Conditions.
  - 1. Submit as part of the pay application a monthly updated CPM work schedule as required in Section 01 32 36.
  - 2. Monthly Progress Report
    - a. Refer to Section 01 31 00, paragraph 1.7 for details.
  - 3. Updated and currently in force proof of insurance. (The proof of insurance needs to only be filed during the month of renewal, however, a lapsed Insurance Certificate will result in Pay Application being held as incomplete)
  - 4. Failure to submit any of the above required items will result in pay application being held until submissions are complete.
- E. Payment Period: Submit at intervals stipulated in the Agreement.
- F. Submit with transmittal letter as specified for Submittals in Section 01 33 00.

#### 1.6 SUBSTANTIATING DATA

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

- C. Include the following with the application when substantiating data is asked for:
1. Current available construction photographs of item in question.
  2. Record documents for review by the Owner which will be returned to the contractor.
  3. Affidavits attesting to off-site stored products.
  4. Construction progress schedules revised and current.
  5. Other data and information as required or asked for by Architect.
- D. Partial Lien Waivers: If directed by Owner or Architect, the Contractor may be required to submit partial lien waivers of subcontractors and suppliers accompanying payment request applications to show proof that he has made percentage of progress payment as shown on previous payment request application. If partial lien waivers are asked for, Contractor must submit them for review and approval. If he has not submitted them, or if a subcontractor or supplier has not been paid for the previous pay periods, the current pay application will not be processed until partial lien waivers are received and approved, or until justification is accepted by Owner and Architect as to the reason payment was withheld for the subcontractor or supplier on previous payment applications.

#### 1.7 PROOF OF INSURANCE FOR MATERIALS STORED OFF SITE.

- A. Payments will only be processed for materials stored off site that are stored in a bonded or insured warehouse. If materials are stored off site on a secure open-air site, material must be insured. Payment claims for materials stored off site must be accompanied with an itemized list of materials establishing value, proof that the materials are insured, and a receipt of storage from a bonded warehouse. Upon payment of materials stored, title to the material shall be to the Owner. All expenses incurred in storage of materials will be paid by the contractor.

#### 1.8 RETAINAGE

- A. In making partial payments for the work, there shall be retained **Five (5%) percent** of the estimated amount for labor and materials until final completion and acceptance of all work covered in the contract. Retainage shall be paid to the Contractor in the final payment if all conditions of the contract documents have been met including completed close-out documents and as-built drawings

PART 2      PRODUCTS      Not Used.

PART 3      EXECUTION      Not Used.

END OF SECTION

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## SECTION 01 31 00

### COORDINATION AND MEETINGS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Coordination and project conditions.
- B. Pre-construction meeting.
- C. Field engineering
- D. Progress meetings.
- E. Pre-installation meetings.
- F. Equipment electrical characteristics and components.
- G. Examination.
- H. Preparation.
- I. Schedule and Reports

##### 1.2 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Coordinate space requirements, supports, and installation of mechanical and electrical Work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

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- E. Coordinate completion and cleanup of Work of separate sections in preparation for Substantial Completion and for portions of Work if designated for Owner's partial occupancy.
- F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

### 1.3 FIELD ENGINEERING

- A. Contractor shall locate and protect survey control and reference points.
- B. Control datum for survey is shown on Drawings.
- C. Verify setbacks and easements; confirm drawing dimensions and elevations.
- D. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.

### 1.4 PRECONSTRUCTION MEETING

- A. Owner, through Architect/Engineer will schedule a meeting after Notice of Award.
- B. Architect shall conduct meeting.
- C. Attendance Required: Owner, Architect/Engineer, Prime Contractor, Major Subcontractors, Representatives of Governmental or other regulating Agencies.
- D. Agenda:
  - 1. Execution of Owner-Contractor Agreement.
  - 2. Submission of executed bonds and insurance certificates.
  - 3. Submission of list of Subcontractors, schedule of values, and progress schedule.
  - 4. Designation of personnel representing the parties in Contract, and the Architect/Engineer.
  - 5. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, and Change Order procedures.
  - 6. Scheduling and coordination of prime contractors.
  - 7. Inspection procedures.
  - 8. Shop drawings and Submittals, Grouping of Submittals
  - 9. Critical areas of the work
  - 10. Reports, testing and scheduling activities of a Geotechnical Engineer.
  - 11. Use of premises by Owner and Contractor.
  - 12. Owner's requirements and occupancy.
  - 13. Construction facilities and controls.
  - 14. Temporary utilities.
  - 15. Procedures for maintaining record documents (As-Builts).
  - 16. Requirements for start-up of equipment.

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17. Inspection and acceptance of equipment put into service during construction period.
18. Contract closeout procedures, Substantial Completion, Final inspection, warranties, and manuals.
19. Other items as deemed necessary by the Architect or owner.

- E. Contractor to record minutes and distribute copies within two days after meeting to participants, with copies to Architect/Engineer, Owner, participants, and those affected by decisions made.

## 1.5 PROGRESS MEETINGS

- A. Contractor will schedule and administer meetings with assistance of Architect throughout progress of the Work at monthly intervals unless different interval is approved by Architect.
- B. Contractor will schedule and make arrangements for meetings, prepare agenda with copies for participants, preside at meetings. Schedule comments from Architect on agenda. Architect to approve schedule.
- C. Contractor shall provide written copies of previous items of discussion, resolution of same, and any new outstanding issues to be addressed.
- D. Attendance is required by the following people:
  1. General Contractor's Project Manager and Job Superintendent
  2. Project Manager and Field Foreman for each trade currently working on the site.
  3. Project Manager of any trade who will be mobilizing on site during the next thirty (30) days.
  4. Representative of Major Suppliers
  5. Owner/Architect/Engineer as appropriate to address agenda items.
- E. Agenda:
  1. Review minutes of previous meetings.
  2. Review of Work progress.
  3. Field observations, problems, and decisions.
  4. Identification of problems which impede planned progress.
  5. Review of submittals schedule and status of submittals.
  6. Review of off-site fabrication and delivery schedules.
  7. Maintenance of progress schedule.
  8. Corrective measures to regain projected schedules.
  9. Planned progress during succeeding work period.
  10. Coordination of projected progress.
  11. Maintenance of quality and work standards.
  12. Effect of proposed changes on progress schedule and coordination.
  13. Contractor to present outline work schedule for the next month.
  14. Other business relating to Work.

- F. Contractor to record minutes and distribute copies within two days after meeting to participants, with copies to Architect/Engineer, Owner, participants, and those affected by decisions made.

#### 1.6 PRE-INSTALLATION MEETING

- A. When required in individual specification sections, convene a pre-installation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Architect/Engineer four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
  - 1. Review conditions of installation, preparation and installation procedures.
  - 2. Review coordination with related work.
- E. Attendance Required: Contractor's Project Manager, Job superintendent, major Subcontractors and suppliers, Owner, Architect/Engineer, as appropriate to agenda topics for each meeting.

#### 1.7 PROGRESS REPORTS

- A. The Contractor shall submit monthly progress reports to the Architect, attached to his request for payment, showing each major item of the work, the current percentage of completion, and whether ahead or behind schedule. Any delays beyond the contractor's control, such as adverse weather conditions, strikes, etc., that delay the project completion are to be documented and submitted each month along with the progress report. Orders for all materials, except those requiring a decision by the Owner, must be placed within thirty (30) days after award of the contract and evidence of such orders furnished to the Architect. For order of materials requiring Owner decision, such as color, texture, etc; these orders will be placed as soon as possible after selection. Contractor is responsible for notifying the Architect when delaying selection will cause delays in completion. These requirements will be considered mandatory prior to any approval of monthly pay request by the Architect.
- B. Include the following items as additional requirements of the monthly report.
  - 1. Updated schedule
  - 2. All meeting minutes for month
  - 3. Updated submittal schedule
  - 4. RFI log (all logs should contain date submitted to Architect, Date returned and Status)

## 1.8 OWNER'S ACCESS TO CONSTRUCTION

- A. In addition to the Architect, the Owner shall be allowed to provide on-site representation as he deems necessary. Contractor and all subcontractors are to allow access to this (these) Individual(s) identified during the pre-construction conference, or by later correspondence from the Architect.

Note: The Architect shall remain the sole responsible party for making selections, determining colors and/or textures, and directing changes in the scope or corrections to the work covered by this contract. **NO EXCEPTIONS!**

PART 2 PRODUCTS Not Used.

PART 3 EXECUTION Not Used.

END OF SECTION

01 31 00-5



## SECTION 01 32 33

### CONSTRUCTION PHOTOGRAPHS & DOCUMENTATION

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Photography.
- B. Electronic Photographic Digital Images
- C. Technique.
- D. Submittals.

##### 1.2 RELATED SECTIONS

- A. Section 01 11 00 - Summary of Work: Stages of the Work.
- B. Section 01 77 00 - Contract Closeout: Project record documents.

##### 1.3 PHOTOGRAPHY

- A. Have available a digital camera of sufficient quality to produce photographs of site and construction throughout progress of work when required or asked for by Architect or Owner. Contractor must have means of electronically transferring images from job site and office via e-mail to Architect/Engineer.
- B. If an Architect elects to view an observation such as footing or slab preparation via photos taken by Contractor, placement will not take place until Architect/Engineer reviews and issues observation and comment of photos.
- C. Take photographs of critical areas asked of the Architect/Engineer.

##### 1.4 IMAGES

- A. Full color.
- B. Size: Appropriate to show detail required.
- C. Identify each image in electronic file name. Identify name of Project, and date of view.
- D. Deliver electronic images to Architect immediately for his/her review and retention in job files.

## 1.5 VIEWS

- A. Consult with Architect/Engineer for instructions on views required.

## 1.6 SUBMITTALS

- A. Deliver e-mail images for each requested installation.

PART 2 PRODUCTS Not Used.

PART 3 EXECUTION Not Used.

END OF SECTION

01 32 33-2

## SECTION 01 32 36

### CONSTRUCTION PROGRESS SCHEDULES

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Format.
- B. Content.
- C. Revisions to schedules.
- D. Submittals.

##### 1.2 RELATED SECTIONS

- A. Section 01 11 00 - Summary of Work: Work sequence.
- B. Section 01 29 76 - Applications for Payment: Application for payment.
- C. Section 01 33 00 - Submittals: Shop drawings, product data,

##### 1.3 FORMAT

- A. Prepare schedules as a horizontal bar chart with separate bar for each major portion of Work or operation, identifying first workday of each week.
- B. Scale and Spacing: To provide space for notations and revisions.
- C. Sheet Size: Multiples of 11 x 17 inches.

##### 1.4 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by specification section number.
- C. Identify work of separate stages, and other logically grouped activities.
- D. Show critical path for sequencing of trades and materials.
- E. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.

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- F. Coordinate content with schedule of values specified in Section 01 29 76.

## 1.5 REVISIONS TO SCHEDULES

- A. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
- B. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes. Show on schedule by either variation of shading or patterns so the difference is apparent.
- C. Provide narrative report to define problem areas, anticipated delays, and impact on Schedule and report corrective action taken or proposed and its effect.
- D. Provide separate schedule of submittal dates for shop drawings, product data, and samples, including dates when submittals will be required from Architect. Show decision dates for selection of finishes.

## 1.6 SUBMITTALS

- A. Submit initial schedules on or before pre-construction conference. After review, resubmit required revised data within ten (10) days.
- B. Submit revised Progress Schedules with each Application for Payment. Pay request will not be processed without revised schedule submittal. Submit one copy for each copy of the Application for payment.
- C. Submit a computer generated horizontal bar chart with separate lines for each section of Work, identifying first work day of each week.
- D. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
- E. Indicate estimated percentage of completion for each item of Work at each submission.
- F. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and required by Allowances.
- G. Show critical path if sequence of work is dependant on certain items or trades completing their work in order for the project to be completed on time.

## 1.7 DISTRIBUTION

- A. Distribute copies of reviewed schedules to Project site file, Subcontractors, suppliers, and other concerned parties.

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

PART 2 PRODUCTS Not Used.

PART 3 EXECUTION Not Used.

END OF SECTION

01 32 36-3

## SECTION 01 33 00

### SUBMITTALS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Submittal procedures.
- B. Proposed Products list.
- C. Product Data.
- D. Shop Drawings.
- E. Samples.
- F. Design data.
- G. Test reports.
- H. Certificates.
- I. Manufacturer's instructions.
- J. Manufacturer's field reports.
- K. Warranties
- L. Erection drawings.

##### 1.2 RELATED SECTIONS

- A. Section 01 40 00 - Quality Control: Manufacturers' field services and reports.
- B. Section 01 77 00 - Contract Closeout: Contract warranties, bonds, manufacturers' certificates, and closeout submittals.

##### 1.3 REFERENCES

- A. AGC (Associated General Contractors of America) publication "The Use of CPM in Construction - A Manual for General Contractors and the Construction Industry".

##### 1.4 GENERAL SUBMITTAL PROCEDURES

- A. Transmit each submittal with AIA Form G810. Or Architect/Engineer accepted form.

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- B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- C. Identify Project, Contractor, Subcontractor or supplier, pertinent drawing and detail number, and specification section number, as appropriate.
- D. Apply Contractor's stamp signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents. **Contractor shall review submittal before submitting to Architect.** Architect will not review submittal until Contractor has shown proof of review.
- E. **Group submittals of like type together such as Plumbing submittals, HVAC submittals, Masonry submittals, Structural submittals, etc.** Review of single submittals of like types will be subject to delay until remaining submittals related to that being submitted are received by Architect.
- F. Architect will review submittals and if applicable, forward to consultant(s) for review. Upon review, Architect or consultant shall stamp each set of submittals indicated review status or required action, if any. This stamp in no way relieves the Contractor of meeting the requirements and/or intent of the specifications. Architect's review of shop drawings and submittals is for intent and general compliance with contract documents. All other criteria are the sole responsibility of the General Contractor and his supplier.
- G. Schedule submittals to expedite the Project and deliver to Architect/Engineer at business address. Coordinate submission of related items.
- H. Where colors and/or patterns are to be selected, or specifications include cash allowances by Architect, request such selections and materials in ample time for procurement.
- I. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor. However, Architect will make every effort to return submittals in a timely manner.
- J. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- K. Provide space for Contractor and Architect/Engineer review stamps on front of submittal, minimum space of 4" x 8" on right hand border.
- L. When revised for resubmission, identify all changes made since previous submission. Similar procedure is to be followed when resubmitting.
- M. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- N. Submittals not requested will not be recognized or processed.

01 33 00-2

## 1.5 ELECTRONIC SUBMITTAL PROCEDURE

- A. **All product data sheets, shop drawings, and miscellaneous submittal information are to be submitted electronically via email, FTP site, or other acceptable electronic submittal means. Please note that at Architect's discretion for large shop drawing submittals, a hard copy would need to be submitted along with electronic submittal. Architect will advise contractor of such submittals.**
1. Contractor shall perform initial review and have comments and review stamp included on electronic submittal or shop drawings. **Please note that this is mandatory. Submittals and shop drawings will not be reviewed by Architect until Contractor reviews them and notes any comments or corrections required.**
  2. Submit for Architect's review.
  3. After review, electronic copy will be sent back to Contractor with any comments and markups, including review stamp status. If comments require re-submittal of all or partial original submittals or shop drawings, correct and resend for final approval or for Architect's record copy.
  4. Contractor to list specification section related to each item submitted. This shall include product data and shop drawings.
- B. Items to be included in electronic submittals (As required by each product or item specification section):
1. Product data
  2. Shop drawings
  3. Design data
  4. Test reports
  5. Certificates
  6. Manufacturer's instructions
  7. Warranties
  8. Erection drawings
  9. Any other information pertinent to a product or item.

## 1.6 PRODUCT DATA

- A. Product Data for Review:
1. Submitted to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
  2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01 77 00 - CONTRACT CLOSEOUT.
- B. Product Data for Information:
1. Submitted electronically for the Architect/Engineer's knowledge as contract administrator or for the Owner.
- C. Product Data for Project Closeout:
1. Submitted for the Owner's benefit during and after project completion.

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- D. Mark each copy to identify applicable products, models, options, and other data.  
Supplement manufacturers' standard data to provide information specific to this Project.
- E. Indicate Product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- F. After review distribute in accordance with the Submittal Procedures article above and provide copies of record documents described in Section 01 77 00 - CONTRACT CLOSEOUT.

## 1.7 SHOP DRAWINGS

- A. Shop Drawings for Review:
  - 1. Submitted to Architect/Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
  - 2. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01 77 00 - CONTRACT CLOSEOUT.
- B. Shop Drawings for Information:
  - 1. Submitted electronically for the Architect/Engineer's knowledge as contract administrator or for the Owner.
- C. Shop Drawings for Project Closeout:
  - 1. Submitted for the Owner's benefit during and after project completion.
- D. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

## 1.8 SAMPLES

- A. Samples for Review:
  - 1. Submit actual samples to Architect/Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
- B. Samples for Information:
  - 1. Submit actual samples for the Architect/Engineer's knowledge as contract administrator or for the Owner.
- C. Samples for Selection:
  - 1. Submitted to Architect/Engineer for aesthetic, color, or finish selection.
  - 2. Submit samples of finishes from the full range of manufacturers' current standard colors, textures, and patterns for Architect/Engineer selection.

01 33 00-4

3. After review, produce duplicates and distribute them in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01 77 00 - CONTRACT CLOSEOUT.
- D. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- E. Include identification on each sample, with full Project information.
- F. Submit the number of samples specified in individual specification sections; one of which will be retained by Architect/Engineer.
- G. For each job-finished material (i.e. Masonry, Stucco, concrete, paint and other finishes), prepare a sample panel as called for in individual sections. Obtain Architect's approval before installing balance of such work. Architect may require additional panels or samples. Contractor shall follow same procedure for Architect's approval. Subsequent work shall be in accordance with the approved sample panels.
- H. Reviewed samples which may be used in the Work are indicated in individual specification sections.
- I. Samples will not be used for testing purposes unless specifically stated in the specification section.

#### 1.9 DESIGN DATA

- A. Submit electronically for the Architect/Engineer's knowledge as contract administrator or for the Owner.
- B. Submit information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

#### 1.10 TEST REPORTS

- A. Submit for the Architect/Engineer's knowledge as contract administrator or for the Owner. All test reports are to immediately be sent to Architect for his/her review.
- B. Submit test reports for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

#### 1.11 CERTIFICATES

- A. When specified in individual specification sections, submit certification by the manufacturer, installation/application Subcontractor, or the Contractor to Architect/Engineer, in quantities specified for Product Data.

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- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product but must be acceptable to Architect/Engineer.

#### 1.12 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Architect/Engineer for delivery to Owner in quantities specified for Product Data. A copy of such information will be included in the appropriate section of Close-Out Documents.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

#### 1.13 MANUFACTURER'S FIELD REPORTS

- A. Submit reports for the Architect/Engineer's benefit as contract administrator or for the Owner.
- B. Submit report within 15 days of observation to Architect/Engineer for information.
- C. Submit information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

#### 1.14 WARRANTIES

- A. Submit product or system warranty for each product submitted on. Warranties shall accompany shop drawings and submittals. The warranty must be at least to a minimum specified in individual sections, but not less than one year from date of substantial completion. Warranties will also be required as part of record documents. Refer to Section 01 77 00.

#### 1.15 ERECTION DRAWINGS

- A. Submit electronic drawings for the Architect/Engineer's benefit as contract administrator or for the Owner.
- B. Submit information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
- C. Data indicating inappropriate or unacceptable Work may be subject to action by the Architect/Engineer or Owner.

01 33 00-6

PART 2 PRODUCTS Not Used.

PART 3 EXECUTION Not Used.

END OF SECTION

01 33 00-7

## SECTION 01 35 16

### ALTERATION PROJECT PROCEDURES

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Products and installation for patching and extending Work.
- B. Transition and adjustments.
- C. Repair of damaged surfaces, finishes, and cleaning.

##### 1.2 RELATED SECTIONS

- A. Section 01 73 29 - Cutting and Patching:
- B. Section 01 50 00 - Construction Facilities and Temporary Controls: Temporary enclosures, protection of installed work, and cleaning during construction.
- C. Section 02 41 19 - Minor Demolition for Remodeling: Removal and storage of products to be reinstalled by this section.

#### PART 2 PRODUCTS

##### 2.1 PRODUCTS FOR PATCHING AND EXTENDING WORK

- A. New Materials: As specified in product sections; match existing Products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing Work as a standard.

#### PART 3 EXECUTION

##### 3.1 EXAMINATION

- A. Verify that demolition is complete and areas are ready for installation of new Work.
- B. Beginning of restoration Work means acceptance of existing conditions.

##### 3.2 PREPARATION

- A. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.

- B. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- C. Remove debris and abandoned items from area and from concealed spaces.
- D. Prepare surface and remove surface finishes to provide for proper installation of new work and finishes.

### 3.3 INSTALLATION

- A. Coordinate work of alterations and renovations to expedite completion to accommodate Owner occupancy.
- B. Remove, cut, and patch Work in a manner to minimize damage and to provide a means of restoring Products and finishes to specified condition in accordance with Section 01 73 29.
- C. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat transition to adjacent finishes in accordance with Section 01 73 29.
- D. In addition to specified replacement of equipment and fixtures restore existing plumbing, heating, ventilation, air conditioning, electrical, and systems to full operational condition.
- E. Recover and refinish Work that exposes mechanical and electrical work exposed accidentally during the work.
- F. Install Products as specified in individual sections.
- G. Any utility line serving existing mechanical or building equipment that is to remain in operation and is required to be temporarily removed because of the remodeling process or interference with new items to be installed shall be logically re-routed to provide continued utility service to the effected equipment. It will be the contractor's responsibility to obtain Architect's approval and coordinate rerouting and reconnection to equipment. There will be no extra cost involved with the removal, rerouting, and reconnection of these utility lines.

### 3.4 TRANSITIONS

- A. Where new Work abuts or aligns with existing, perform a smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
- B. When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect/Engineer.

### 3.5 ADJUSTMENTS

- A. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
- B. Where a change of plane of 1/4 inch or more occurs, submit recommendation for providing a smooth transition for Architect/Engineer review.
- C. Trim existing doors as necessary to clear new floor finish. Refinish trim as required.
- D. Fit work at penetrations of surfaces as specified in Section 01 73 29.

### 3.6 REPAIR OF DAMAGED SURFACES

- A. Patch or replace portions of existing surfaces that are damaged, lifted, discolored, or showing other imperfections.
- B. Repair substrate prior to patching finish.

### 3.7 FINISHES

- A. Finish surfaces as specified in individual Product sections.
- B. Finish patches to produce uniform finish and texture over entire area. When the finish cannot be matched, refinish entire surface to nearest intersections.

### 3.8 CLEANING

- A. In addition to cleaning specified in Section 01 77 00, clean Owner-occupied areas of work.

END OF SECTION

01 35 16-3

## SECTION 01 40 00

### QUALITY CONTROL

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Quality assurance - control of installation.
- B. Cleaning during construction
- C. Tolerances
- D. Protection
- E. References and standards.
- F. Inspecting and testing laboratory services.
- G. Architect/Engineer Construction Observation Notices
- H. Required Special Inspections
- I. Required Pre-Installation Meetings
- J. Manufacturers' field services.
- K. Tobacco Use

##### 1.2 RELATED SECTIONS

- A. Section 01 33 00 - Submittals: Submission of manufacturers' instructions and certificates.
- B. Section 01 60 00 - Material and Equipment: Requirements for material and product quality.
- C. Section 01 75 00 - Starting of Systems.

##### 1.3 CRAFTMANSHIP

- A. Each trade is to perform work and install products, following best standards of their industry. Work not in conformance with industry standards and quality will not be tolerated and will be subject to rejection.

01 40 00-1



## 1.4 QUALITY ASSURANCE - CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Furnish, apply, install, connect, erect, clean, and condition manufactured articles, materials, and equipment per manufacturer's printed directions, unless otherwise indicated or specified. Comply with manufacturers' instructions, including each step-in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement. All attachment devices and materials shall be required to secure materials together or to other materials and to secure work of other trades.
- H. Manufacturer's printed directions must be on the job prior to and during installation of materials and equipment.
- I. Make allowance for ample expansion and contraction for all building components subject to same.
- J. Each trade shall provide sleeves, recesses and openings in their work as required to receive work from other trades.
- K. Make field check of actual building dimensions before fabricating products.
- L. Where proper fit of work depends upon close tolerances of manufactured products, furnish manufacturer with necessary templates to insure proper fit of all components.
- M. Install materials only when conditions of temperature, moisture, humidity, and condition of adjacent building components are conducive to achieving the best installation on results.

- L. Erect, install and secure building components in a structurally sound and appropriate manner. Where necessary, temporarily brace, shore, or otherwise support members until final connection or installation. Brace walls and other structural elements to prevent damage by wind and construction operations. Leave temporary bracing, shoring or other structural supports in place as long as necessary for safety and until the structure is strong enough to withstand all loads involved.
- O. Where construction consists of a series of courses of units, assemble units in best acceptable manner to provide structurally sound installation, waterproof where exposed to exterior. Accurately plumb and level all courses and verify levels of frequent courses with instruments.
- P. Handle materials in a manner to prevent scratching, abrading, distortion, chipping, breaking or other disfigurement.
- Q. Unless indicated, fabricate, and install materials true to line, plumb and level. Leave finished surfaces smooth and flat or of smooth contour where indicated, free from wrinkles, warps, scratches, dents, and other imperfections.
- R. Provide a quality of workmanship not less than the commercially accepted standards of that trade.
- S. Where obviously of best practice, furnish materials in longest practical lengths and largest practical sizes to avoid unnecessary jointing. Make all joints secure.
- T. Where fabrics, plastics and other such items join, make seams tight, secure and inconspicuous.
- U. Scribe and/or otherwise neatly fit materials to adjoining materials.
- V. Consult Architect for mounting height or position of any unit not specifically located.
- W. Mix no more materials than can be used before materials begin to “set”. Mix no partially “set” batch with another. Clean tools and appliances prior to mixing materials to avoid contamination.
- X. Conduct work in a manner to avoid injury to previously placed work.
- Y. Do not disturb materials requiring curing time until appropriate curing time has transpired.
- Z. Vertical & Horizontal Penetrations and Sleeves:
  - 1. Contractor is responsible for the layout, placement and identification of all necessary sleeves or penetrations needed to complete his work.
  - 2. All penetrations are to be fire stopped (where penetrating smoke and fire rated barriers) and sealed watertight prior to completion of contractor’s work.

3. All vertical sleeves or penetrations are to extend one and one half (1 ½") above the floor, slab, or housekeeping pad and be sealed watertight.
- AA. Coordinate plumbing fixtures and valves with all toilet accessories to obtain proper clearances and meet ADA Guidelines at accessible locations.
- BB. Contractor to be responsible for coordinating items or equipment provided by owner so that proper space and clearances are provided in newly installed work. Notify the owner if conflicts are found.
- CC. During construction, if any material or product is damaged, it shall be repaired to the Architect's satisfaction. If the repair is not satisfactory, the material or product will be replaced at no additional cost to owner.
- DD. Where masonry is installed, all vertical and horizontal joints align according to bond types. Where differing masonry types are installed in same wall, joints are to align between each masonry unit type unless noted otherwise.
- EE. Where electrical conduit & wire, plumbing piping, fire sprinkler piping and mechanical ductwork are exposed, each trade is to install items neatly and coordinated with work of other trades. Where multiple electrical conduits or pipes protrude through walls or space, they are to be evenly spaced apart and routed in the same plane. **Do not install below finished ceiling elevation unless shown otherwise.** At exposed structure locations conduit to exit wall at top of wall at coursing directly below roof supporting bond beam. Ductwork shall be routed logically and will be installed to provide neat, clean, and aligned appearance, both vertically and horizontally.
- FF. No items including millwork and ceiling grid are to be installed against or on walls prior to the final coat of paint being applied.

#### 1.5 CLEANING DURING CONSTRUCTION

- A. Contractor to keep building and site reasonably free of debris during construction, including mud and dirt inside building. Provide means for keeping mud and clay off floors that are to remain unfinished or clear sealed only.
- B. If a floor sweep product is used, use only a wax base product. **Oil base products are not to be used.** Verify with floor covering and adhesive suppliers and obtain approval of floor sweep product so that warranty is not jeopardized.

#### 1.6 DUST CONTROL DURING CONSTRUCTION

- A. Contractor to keep dust on site to a minimum the entire duration of construction by means of regular watering. This will include dust created by grading operations, vehicular traffic, and wind. Also comply with SWPPP requirements.

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- B. Contractor to sprinkle work with water during demolition operations to minimize dust. Provide hoses and water connections for this purpose.

## 1.7 MATERIALS STORAGE

- A. Limit site storage for construction materials in a central, secured area, within the boundaries of construction area. Assume full responsibility for protection of same.

## 1.8 APPROPRIATE MATERIALS

- A. No materials containing asbestos fibers shall be allowed in any construction materials used in this project. General Contractor shall provide written certification to this effect at the end of the project. Certification shall be included in the project close-out documents. Refer to Section 02 26 23.
- B. Should the General Contractor or any subcontractors discover materials that must be disturbed and are suspected of containing asbestos fibers or hazardous material, immediately notify the Architect. No disruption of such materials shall be attempted.

## 1.9 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerance to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

## 1.10 PROTECTION

- A. Protect installed materials to prevent damage until substantial completion and comply with individual specification sections pertaining to protection of finished products.
- B. No gypsum board, batt insulation, or materials prone to damage by moisture, mold and/or mildew will be installed prior to enclosing and drying in of building.
- C. During construction, if any material is damaged after installation because of moisture, mold and/or mildew, it shall be replaced immediately.
- D. Prior to installation and/or application of interior finishes, the building will be completely enclosed, dried in and conditioned continually to meet minimum temperature and humidity requirements for finished product installation/application.

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## 1.11 REFERENCES AND STANDARDS

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes. The contractor is to be familiar with all standards pertaining to project.
- B. Conform to reference standards at date of invitation to bidders.
- C. Obtain copies of standards when required by the Contract Documents.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from the Architect/Engineer before proceeding.
- F. Neither the contractual relationship, duties, nor responsibilities of the parties in Contract nor those of the Architect/Engineer shall be altered by the Contract Documents by mention or inference otherwise in any reference document.

## 1.12 REFERENCES

- A. Reference to technical society, organization or body is made in these specifications in accordance with but not limited to the following:
  - AIA AMERICAN INSTITUTE OF ARCHITECTS
  - ACI AMERICAN CONCRETE INSTITUTE
  - ADA THE AMERICANS WITH DISABILITIES ACT
  - AEC ARKANSAS ENERGY CODE
  - AFGG ARKANSAS FUEL GAS CODE
  - AFPC ARKANSAS FIRE PREVENTION CODE
  - AIEE AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS
  - AISC AMERICAN INSTITUTE OF STEEL CONSTRUCTION
  - AMC ARKANSAS MECHANICAL CODE
  - APC ARKANSAS PLUMBING CODE
  - ASHRAE AMERICAN SOCIETY OF HEATING, REFRIGERATING, AND AIR-CONDITIONING ENGINEERS, INC.
  - ASME AMERICAN SOCIETY OF MECHANICAL ENGINEERS
  - ASTM AMERICAN SOCIETY FOR TESTING MATERIALS
  - AWSC AMERICAN WELDING SOCIETY CODE
  - AWI ARCHITECTURAL WOODWORK INSTITUTE
  - IBC INTERNATIONAL BUILDING CODE
  - IMC INTERNATIONAL MECHANICAL CODE
  - IPC INTERNATIONAL PLUMBING CODE
  - NBFU NATIONAL BOARD OF FIRE UNDERWRITERS
  - NBS NATIONAL BUREAU OF STANDARDS
  - NEC NATIONAL ELECTRIC CODE

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NFPA     NATIONAL FIRE PROTECTION ASSOCIATION  
OSHA     OCCUPATIONAL SAFETY & HEALTH ACT OF 1970  
UL        UNDERWRITERS' LAB

#### 1.13 TESTING SERVICES

- A. Furnish materials and equipment that have been properly inspected and tested in accordance with accepted industry standards. Make field or laboratory tests where specified herein, the costs of such being paid for by the contractor, unless specifically stated otherwise. **FOR TESTING PAID FOR BY CONTRACTOR, THE PROPOSED TESTING LABORATORY/ENGINEER MUST BE APPROVED BY THE ARCHITECT NO LATER THAN 10 DAYS PRIOR TO BID OPENING.** If certain tests are to be paid for by others, the General Contractor will remain responsible for scheduling and coordinating their tests at appropriate times.
- B. Should such test or visual observation indicate failure of the materials or construction to meet requirements of the drawings and or specification, Contractor is to make additional tests as directed by the Architect, until compliance has been achieved. If such work should fail to comply, Contractor shall replace it at his expense. Charges for this additional testing will be paid for by the Contractor.
- C. Testing and source quality control may occur on or off the project site. Perform off-site testing as required by the Architect/Engineer or the Owner.
- D. Reports will be submitted by the independent firm to the Architect/Engineer and Contractor at the same time, indicating observations and results of tests and indicating compliance or noncompliance with Contract Documents.
- E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
  - 1. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
- F. Testing does not relieve Contractor to perform Work to contract requirements.

#### 1.14 NOTICE FOR ARCHITECT/ENGINEER OBSERVATION

- A. Whenever specifications require the contractor to have any part of the work observed and approved by the Architect, **THE CONTRACTOR SHALL GIVE THE ARCHITECT A MINIMUM 24 HOUR NOTICE** as to when that part of the work will be ready for observation. No part of weekends or holidays shall be counted as part of the required hours of notice. If the schedule of work has changed after notification, immediately notify Architect to inform him of change. The following is a partial list of items requiring Construction Observation. This is a general listing; your specific project may not contain some of the items listed. Refer to each individual specification section for additional observation requirements:

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1. **Sanitary Sewer Line:** 24 hr 10' standpipe, proper bedding, proper clearances from water lines
2. **Domestic Water Line:** 24 hr city wall pressure or 75 psi air pressure test, proper bedding, proper clearance from sanitary sewer lines.
3. **Wall and Above Ceiling:** correct insulation, mechanical and electrical engineers are to inspect conduits, ducts etc. prior to closing in walls.

#### 1.15 REQUIRED SPECIAL INSPECTIONS

- A. When required by local or governing jurisdiction, the contractor will arrange with testing company, special inspections in accordance with Chapter 17 of the International Building Code. Owner is to pay for special inspections. Contractor to coordinate.

#### 1.16 REQUIRED PRE-INSTALLATION MEETINGS

- A. When noted in individual Specification Sections, on-site pre-installation meetings will be scheduled and held by the Contractor prior to installation of system, product or material. Installation of items is not to begin until meeting is held. Each specification Section should state the people that are required to attend each meeting.

#### 1.17 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Architect/Engineer 30 days in advance of required observations.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- D. Refer to Section 01 33 00 - SUBMITTALS, MANUFACTURERS' FIELD REPORTS article.

#### 1.18 TOBACCO USE

- A. **Absolutely no tobacco or e-cigarette use is permitted inside new or existing building areas throughout construction of project.** No tobacco or e-cigarette use is permitted on entire site at anytime while present on public school property.

PART 2 PRODUCTS      Not Used.

01 40 00-8

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Verify that utility services are available, of the correct characteristics, and in the correct locations.

### 3.2 PREPARATION

- A. Clean substrate surfaces prior to applying the next material or substance.
- B. Seal cracks or openings of substrate prior to applying the next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

END OF SECTION

01 40 00-9



## SECTION 01 50 00

### CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Temporary Utilities: Electricity, lighting, heat, ventilation, telephone service, water, and sanitary facilities.
- B. Temporary Controls: Barriers, enclosures and fencing, protection of the Work, and water control.
- C. Construction Facilities: Access roads, parking, progress cleaning, project signage, and temporary buildings.
- D. Temporary Equipment

##### 1.2 RELATED SECTIONS

- A. Section 01 77 00 - Contract Closeout: Final cleaning.

##### 1.3 TEMPORARY ELECTRICITY

- A. Cost: By Contractor; provide and pay for power service required from utility source. Provide enough power and voltage/phase sufficient for construction needs of any and all trades during course of construction. Contractor shall continue to pay for this temporary service until project is substantially complete as determined by Architect and/or Owner.
- B. Cost: By Owner; connect to Owner's existing power service. Do not disrupt Owner's use of service. Owner will pay cost of energy used. Exercise measures to conserve energy.
  - 1. Do not disrupt Owner's use of service.
  - 2. Complement existing power service capacity and characteristics as required.
  - 3. Contractor is to field verify adequate existing power. If project requires additional power not available on site, contractor to provide at no additional cost to Owner.
- C. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.
- D. Provide main service disconnect and over current protection and meter at convenient location.
- E. Permanent convenience receptacles may be utilized during construction. Damage done to receptacles and cover plates during construction period shall be repaired and or replaced.

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

#### 1.4 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain lighting for construction operations to achieve a minimum lighting level of 2 watt/sq ft.
- B. Maintain lighting and provide routine repairs.
- C. Permanent building lighting may be utilized during construction.

#### 1.5 TEMPORARY HEATING

- A. Utilize Owner's existing heat plant, extend and supplement with temporary heat devices as needed to maintain specified conditions for construction operations. Contractor will replace filters as needed to keep system operating at optimum efficiency. Refer to Section 23 01 00 for additional requirements during construction.
  - 1. Owner will pay cost of energy used. Exercise measures to conserve energy. Enclose building prior to activating temporary heat in accordance with the Exterior Enclosures article in this section.
- B. Maintain minimum ambient temperature between 50 and 70 degrees F during working hours and 35 degrees F at other times in areas where construction is in progress, unless indicated otherwise in product sections.

#### 1.6 TEMPORARY COOLING

- A. Utilize Owner's existing cooling plant.
  - 1. Owner will pay cost of energy used. Exercise measures to conserve energy. Provide separate metering and reimburse Owner for cost of energy used. Enclose building prior to activating temporary cooling in accordance with the Exterior Enclosures article in this section.
- B. Prior to operation of permanent equipment for temporary cooling purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.
- C. Just prior to turning building or portions of building over to owner, contractor will replace all filters on equipment that was used for temporary ventilation, heat, or cooling during construction. Double-filter at return air during construction.
- D. Maintain maximum ambient temperature of 80 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.

## 1.7 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Utilize existing ventilation equipment as they become available. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.

## 1.8 TELEPHONE SERVICE

- A. Contractor to have cellular telephone service at time of project mobilization.
- B. Equipment to remain in operation until project substantial completion is issued.

## 1.9 COMPUTER E-MAIL SERVICE

- A. Provide, maintain and pay for computer to contractor's office at time of project mobilization.
- A. Equipment to remain in operation until project substantial completion is issued.

## 1.10 TEMPORARY WATER SERVICE

- A. Owner will provide water from existing water source (i.e. hose bibb) Exercise measures to conserve water. If additional water demand becomes necessary, contractor will be responsible for providing and paying for temporary service. Contractor to verify existing water source is available and adequate for his needs prior to bid date.

## 1.11 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain the required facilities and enclosures. Existing facility use is not permitted. Provide at time of project mobilization. Maintain disposal service on a weekly basis and more often as required.

## 1.12 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

## 1.13 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification sections.

- B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to prevent damage.
- C. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- D. Protect previously placed work by suitable coverings or other protection during installation of subsequent work. Immediately clean off any foreign materials accidentally deposited on finished surfaces and where such would stain, corrode, or otherwise disfigure work.
- E. Support no runways, ramps, or construction equipment on, nor transport over any items or assemblies subject to displacement, disfigurement, or other damage to finished surfaces.

#### 1.14 SECURITY

- A. Provide security and facilities to protect Work, and existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.
- B. Coordinate with Owner's security program.

#### 1.15 PARKING

- A. Coordinate parking for workers with owner.

#### 1.16 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and rubbish from site weekly, or more often if needed, and dispose off-site.
- E. Open free fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

#### 1.17 PROJECT IDENTIFICATION

- A. No signs are allowed without Owner permission except those required by law.

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#### 1.18 FIELD OFFICES AND SHEDS

- A. Contractor's option to provide but not required.

#### 1.19 TEMPORARY EQUIPMENT

- A. Contractor is to provide temporary elevators, hoists, walks, ramps, ladders, runways, scaffolding, shoring, bracing, and other equipment required for proper progress of project work.
- B. Each subcontractor is to provide proper equipment necessary to perform and complete work associated with his trade.

#### 1.20 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, and all other temporary items prior to Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing and permanent facilities used during construction to original or specified condition as indicated on drawings and specifications.

PART 2 PRODUCTS Not Used.

PART 3 EXECUTION Not Used.

END OF SECTION

01 50 00-5

## SECTION 01 60 00

### MATERIAL AND EQUIPMENT

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Products.
- B. Transportation and handling.
- C. Storage and protection.
- D. Product options.
- E. Substitutions.

##### 1.2 RELATED SECTIONS

- A. Section 01 40 00 - Quality Control: Product quality monitoring.

##### 1.3 PRODUCTS

- A. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- B. Provide interchangeable components of the same manufacturers for components being replaced.

##### 1.4 TRANSPORTATION AND HANDLING

- A. Transport and handle Products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct, and Products are undamaged.
- C. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

##### 1.5 STORAGE AND PROTECTION

- A. Store and protect Products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.

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- C. Store sensitive Products in weather tight, climate controlled, enclosures in an environment favorable to Product.
- D. For exterior storage of fabricated Products, place on sloped supports above ground.
- E. Provide bonded or insured off-site storage and protection when site does not permit on-site storage or protection.
- F. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of Products.
- G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.

#### 1.6 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article.

#### 1.7 ALTERNATE SUBSTITUTIONS

- A. In general, these Specifications identify the required materials and equipment by naming one or more manufacturer's brand, model, catalog number and/or other identification; the first-named manufacturer's product used as the basis for design; other named brands considered acceptable for the application by Architect. Alternate brand manufacturers named must furnish products consistent with the specifications for the first-named product, as determined by Architect. Base Proposal shall include only those brands named, except as hereinafter provided.
  - 1. Submit product data and specifications.
  - 2. Submit color samples if color selection is required or specified.
  - 3. Provide a list of locations and contacts with telephone numbers of local installations.
  - 4. Provide qualifying comparison, comparing specifications of specified product to proposed substitution.

If any of these items are not provided, proposed substitution will be rejected.

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- B. Where materials or equipment are described but not named, provide required first-quality items, adequate in every respect for the intended use, such items subject to Architect's approval prior to procurement.
- C. Prior to receipt of proposals, should Contractor wish to incorporate in Base Proposal brands of products other than those named in Specifications, **he shall submit written request for substitution with required information to Architect not later than ten (10) days prior to date proposals are due.** Architect will consider requests and items. If proposed substitution is approved, it will be listed in an addendum issued to principal Proposers.
- D. After execution of Owner-Contractor Agreement, alternate substitution of product brands for those named in Specifications will be considered, only if (1) request is received within thirty (30) calendar days after Contract date and request includes statement showing credit due Owner, if any; if substitution product is used, (2) Owner requests consideration be given to substitute brands, (3) Proposer provides qualifying comparison, comparing specifications of specified product to proposed alternate substitution. If this is not provided, the proposed substitution will be rejected. The Architect/Engineer will notify Contractor in writing of decision to accept or reject request.
- E. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents. Materials and equipment proposed for substitution shall be acceptable by Architect to that specified in regard to construction, efficiency, utility, aesthetic design, and color. The Architect's decision shall be final and without further recourse. The physical size of substitute brand shall not be larger than the space provided for it. Requests must be accompanied by full description and technical data, in two copies, including manufacturer's name, model, catalog number, photographs or cuts, physical dimensions, operating characteristics, and any other information necessary for comparison.
- F. Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.
- G. A request constitutes a representation that the Bidder: / Contractor:
1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
  2. Will provide the same warranty for the Substitution as for the specified Product.
  3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
  4. Waives claims for additional costs or time extension which may subsequently become apparent.
  5. Will reimburse Owner and Architect/Engineer for review or redesign services associated with re-approval by authorities if required.



H. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, specifications section states that no substitutions are allowed for a specific material or item, or when acceptance will require revision to the Contract Documents.

PART 2 PRODUCTS Not Used.

PART 3 EXECUTION Not Used.

END OF SECTION

01 60 00-4

## SECTION 01 73 29

### CUTTING AND PATCHING

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Requirements and limitations for cutting and patching of Work.

##### 1.2 RELATED SECTIONS

- A. Section 01 33 00 - Submittals.
- B. Section 01 11 00 - Summary of Work: Work by Owner or by separate Contractors.
- C. Section 01 35 16 - Alteration Project Procedures: Cutting and patching for alterations work.
- D. Section 01 60 00 - Material and Equipment: Product options and substitutions.
- E. Section 07 84 13 - Fire stopping.
- F. Individual Product Specification Sections:
  - 1. Cutting and patching incidental to work of the section.
  - 2. Advance notification to other sections of openings required in work of those sections.
  - 3. Limitations on cutting structural members.

##### 1.3 SUBMITTALS

- A. Submit written request in advance of cutting or alteration which affects:
  - 1. Structural integrity of any element of Project.
  - 2. Integrity of weather exposed or moisture resistant element.
  - 3. Efficiency, maintenance, or safety of any operational element.
  - 4. Visual qualities of sight exposed elements.
  - 5. Work of Owner or separate Contractor.
- B. Include in request:
  - 1. Identification of Project.
  - 2. Location and description of affected Work.
  - 3. Necessity for cutting or alteration.
  - 4. Description of proposed Work and Products to be used.
  - 5. Alternatives to cutting and patching.
  - 6. Effect on work of Owner or separate Contractor.
  - 7. Written permission of affected separate Contractor.
  - 8. Date and time work will be executed.

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## PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Primary Products: Those required for original installation.
- B. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00.

## PART 3 EXECUTIONS

### 3.1 EXAMINATION

- A. Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.
- B. After uncovering existing Work, assess conditions affecting performance of work.
- C. Beginning of cutting or patching means acceptance of existing conditions.

### 3.2 PREPARATION

- A. Provide temporary support to ensure structural integrity of the Work. Provide devices and methods to protect other portions of the Project from damage.
- B. Provide protection from elements for areas which may be exposed by uncovering work.
- C. Maintain excavations free of water.

### 3.3 CUTTING

- A. Execute cutting and fitting including excavation and fill if required, to complete the Work.
- B. Remove and replace defective or nonconforming work.
- C. Remove samples of installed work for testing when requested.
- D. Provide openings in the Work for penetration of mechanical and electrical work.
- E. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

### 3.4 PATCHING

- A. Execute patching to complement adjacent Work. Match with existing finish where exposed to view unless noted otherwise.
- B. Fit Products together to integrate with other Work.
- C. Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.
- D. Employ skilled and experienced installer to perform patching for weather exposed and moisture resistant elements, and sight exposed surfaces.
- E. Restore work with new Products in accordance with requirements of Contract Documents.
- F. Fit work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- G. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire resistant material in accordance with Section 07 84 00 to full thickness of the penetrated element.
- H. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish the entire unit.

END OF SECTION

01 73 29-3

## SECTION 01 75 00

### STARTING OF SYSTEMS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Starting systems.
- B. Demonstration and instructions.
- C. Testing, adjusting, and balancing.

##### 1.2 RELATED SECTIONS

- A. Section 01 40 00 - Quality Control: Manufacturers field reports.
- B. Section 01 77 00 - Contract Closeout: System operation and maintenance data and extra materials.
- C. Division 23 – Heating, Ventilation, and Air Conditioning

##### 1.3 STARTING SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Architect/Engineer seven days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable manufacturer's representative or Contractors' personnel in accordance with manufacturers' instructions and requirements.
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

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- H. Submit a written report in accordance with Section 01 33 00 that equipment or system has been properly installed and is functioning correctly.

#### 1.4 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of final inspection.
- B. Demonstrate Project equipment and instruct the owner's representative by a qualified manufacturers' representative who is knowledgeable about the Project.
- C. For equipment or systems requiring seasonal operation, perform demonstrations for other season within six months.
- D. Utilize operation and maintenance manuals as the basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.
- E. Demonstrate start-up, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at agreed time, at equipment location.
- F. Prepare and insert additional data in operations and maintenance manuals when the need for additional data becomes apparent during instruction.
- G. The amount of time required for instruction on each item of equipment and system is specified in individual sections.
- H. Contractor to provide DVD recording of all training sessions with Owner personnel. A copy of the recorded training sessions is to be given to the Owner included in the closeout documents.

#### 1.5 TESTING, ADJUSTING, AND BALANCING

- A. The Contractor will employ services of an independent firm to perform testing, adjusting, and balancing. Contractor shall pay for services.
- B. The independent firm will perform the services specified in Division 23.
- C. Reports will be submitted by the independent firm to the Architect/Engineer indicating observations and results of tests and indicating compliance or noncompliance with the requirements of the Contract Documents.

PART 2 PRODUCTS Not Used.

PART 3 EXECUTIONS Not Used.

END OF SECTION

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## SECTION 01 77 00

### CONTRACT CLOSEOUT

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Closeout procedures.
- B. Final cleaning.
- C. Adjusting.
- D. Project record documents.
- E. Operation and maintenance data.
- F. Spare parts and maintenance Products.
- G. Warranties and Guarantees.
- H. Maintenance service.

##### 1.2 RELATED SECTIONS

- A. Section 01 50 00 - Construction Facilities and Temporary Controls: Progress cleaning.
- B. Section 01 75 00 - Starting of Systems: System start-up, testing, adjusting, and balancing.

##### 1.3 CLOSEOUT PROCEDURES

- A. Contractor shall notify Architect ten (10) days prior to the date on which the building will be ready for final inspection and prepare his own punch list of items to complete to meet contract documents. Such notice shall not be made until completion of all items is assured, and has submitted completed punch list items to Architect. Architect will not schedule inspection for punch list until Contractor's completed punch list is received and each item is initialed by contractor as complete.
- B. Incomplete work found during the inspection shall be grounds for ceasing the inspection. Final inspection shall be resumed again only upon completion of work.
- C. Minor adjustments and corrections to work shall not be considered cause for discontinuing final inspection.

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- D. Upon receipt of punch list prepared by Architect, the Contractor will immediately make necessary corrections to work as required for final completion of the project.
- E. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect/Engineer's review.
- F. Provide submittals to Architect / Engineer that are required by any governing or other authorities.
- G. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due. The final application for payment will not be approved for payment by the Architect until the "COMPLETE CLOSEOUT" documents are provided to and reviewed by the Architect by the Contractor.
- H. Owner will occupy portions of the remodeled building as specified in Section 01 11 00.

#### 1.4 FINISHING

- A. Adjust doors, drawers, hardware, motors, valves, controls, and other equipment for proper operation.
- B. Seal exterior joints between materials.
- C. Clean surface using appropriate materials and methods that will thoroughly clean but not damage materials and their finishes.

#### 1.5 REPAIRS

- A. Unless Architect grants permission to repair any defective work, remove from project any work not in accordance with Contract Documents. Permission to repair any such work shall not constitute a waiver of Architect's right to require complete removal of defective work if repair operation does not restore quality and appearance of member of surface to Architect's satisfaction. If permission is granted, repair according to Architect's directions.

#### 1.6 COMPLETED WORK

- A. Completed work shall find materials structurally sound, free from scratches, abrasions, distortions, chips, breaks, blisters, holes, splits, or other disfigurement considered as imperfections for the specific material.
- B. Completed surfaces shall be thoroughly clean and free from foreign materials and stains.
- C. Contractor is to install, connect, service and operate permanent systems at earliest practical dates, unless otherwise directed by Architect.

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## 1.7 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- D. Clean permanent filters or replace disposable filters of operating equipment.
- E. Remove waste and surplus materials, rubbish, and construction facilities from the site.

## 1.8 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.
- B. Adjust doors, drawers, hardware, appliances, motors, valves, controls, and other equipment for proper operation.

## 1.9 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
  - 1. Drawings.
  - 2. Specifications.
  - 3. Addenda.
  - 4. Change Orders and other modifications to the Contract.
  - 5. Reviewed Shop Drawings, Product Data, and Samples.
  - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
  - 1. Manufacturer's name and product model and number.
  - 2. Product substitutions or alternates utilized.
  - 3. Changes made by Addenda and modifications. (Actual sections of addendum items may be pasted into specification in appropriate locations.)

- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
1. Measured depths of foundations in relation to finish floor datum.
  2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent marker (i.e. new building, property line, etc.).
  3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
  4. Field changes of dimension and detail.
  5. Details not on original Contract drawings.
  6. Changes made by Addenda and modifications. (Actual sections of addendum items may be pasted onto drawings in appropriate locations.)
- G. Submit to Architect in electronic media, **two (2) DVDs or Flash Drives**, containing **Record Documents as described in this section** and scanned **As-Built drawings in PDF format**, properly marked to show field modifications. **These shall include both Drawings and Specifications.** For videos asked for, provide videos on separate DVDs or Flash Drives

#### 1.10 CLOSEOUT DOCUMENTS

- A. Prepare DVD or Flash Drive titled "CLOSEOUT DOCUMENTS", title of project, and subject matter.
- B. Submit two (2) complete Sets of closeouts and As-Built drawings in electronic format, within 60 days after final inspection.
- C. Organize closeout contents, logically organized into sections as described below.

##### GENERAL (section tab)

###### Contents:

1. A Directory, listing names, addresses, and telephone numbers of Architect / Engineer, Contractor, Subcontractors, and major equipment suppliers.
2. Executed original of occupancy permit
3. Punch Lists showing items signed off as completed by Contractor.
4. Contractor's "Asbestos Free" certification letter stating that no materials have been placed in the building containing asbestos material.

##### LIEN WAIVERS (section tab)

Lien Waivers must demonstrate that the project is free of any debt or claim from any subcontractor, supplier or vendor and that the project is free and clear with the exception of monies owed the General Contractor. All subcontractors and suppliers must have been completely paid with the exception of the percentage of monies owed by the General Contractor, or payment a bond posted for each sub-contractor and supplier for whom a balance is owed. For this project, the amount is not to exceed Five Percent (5%) of their contract. Lien waiver submitted from each subcontractor and supplier is to show amount they are still owed. **These requirements are mandatory conditions to qualify for final payment.**

Contents:

1. AIA G706A - CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIENS
2. AIA G706 - CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS
3. AIA G707 - CONSENT OF SURETY TO FINAL PAYMENT
4. Final Lien Release from each subcontractor and supplier.

WARRANTIES / GUARANTEES / BONDS (section tab)

- A. Provide notarized copies, one original and one photocopy. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers. Submit warranties prior to final Application for Payment. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.
- B. Provider manufacturer **warranties and guarantees** for each product and system provided under this contract. Provide installer and manufacturer warranty department phone numbers and contact person if available for each product and system. This is a general listing; your specific project may not contain some of the items listed.

Contents:

1. General Contractor's Statement of Warranty
2. All manufacturer's warranties and guarantees stipulated or implied on equipment and products (i.e., carpet wear, prefinished metal finish, etc.)
3. One-year warranty from each subcontractor
4. Below-Grade Waterproofing Membrane Warranty (Five-Year)
5. Lockset warranty: Cylindrical: 10-year
6. Door closers: 30-years
7. Suspended ceilings: 30-year limited system performance Warranty
8. Millwork: 10-year warranty
9. Modular carpet warranty: (Refer to specific Specification Section)

1.11 MISCELLANEOUS EQUIPMENT & MATERIALS

Contents:

1. Directory, listing names, addresses, and telephone numbers of Subcontractors, and major equipment or materials suppliers.
2. Operation and maintenance instructions for equipment arranged by system and subdivided by specification section. Identify the following:
  - a. Significant design criteria.
  - b. List of equipment.
  - c. Parts list for each component.
  - d. Operating instructions.
  - e. Maintenance instructions for equipment and systems.
  - f. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
3. Finish material schedule including the following:
  - a. Listing of all materials

- b. Manufacturers of each material.
- c. Color or finish supplied on each material.
- 4. Project documents and certificates, including the following:
  - a. Shop drawings and product data.
  - b. Material Maintenance instructions and recommendations.
  - c. Wear, finish, or misc. guarantees

#### 1.12 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Provide spare parts, maintenance, and extra products in quantities specified in individual specification sections.
- B. Deliver to project site and place in location as directed by Owner; obtain receipt prior to final payment.

#### 1.13 CLOSEOUT SUBMITTAL LIST

The following is a list of submittals required by this section. It includes but is not necessarily limited to the following:

- All warranties guarantees and bonds as listed above.
- Record Drawings and Shop Drawings - Provide one set of All Shop Drawings, and two sets of Record Drawings per section 1.9.
- A Directory, listing names, addresses, and telephone numbers of Architect / Engineer, Contractor, Subcontractors, and major equipment suppliers.
- Executed original of occupancy permit
- Copy of Architect's and consultant's punch list(s) with the project manager's initials beside each item signifying that each item has been corrected.
- Contractor's "Asbestos Free" certification letter.
- AIA G706A - CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIENS
- AIA G706 - CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS
- AIA G707 - CONSENT OF SURETY TO FINAL PAYMENT
- Final Lien Release from each subcontractor and supplier.
- General Contractor's Statement of Warrantee

PART 2 PRODUCTS Not Used.

PART 3 EXECUTION Not Used.

END OF SECTION

01 77 00-6

## SECTION 02 26 23

### ASBESTOS PRECAUTIONS AND PROCEDURES

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Contractors responsibilities concerning asbestos containing materials (ACM) in the existing building or systems where work is to occur.
- B. Contractor's responsibilities concerning asbestos in materials, products, and equipment used in the construction project.

##### 1.2 DISCOVERY OF ASBESTOS CONTAINING MATERIALS (ACM)

- A. Unless indicated otherwise within the construction documents. ACM's are not known to be present in the existing building or system where work is to occur.
- B. During the construction project, the contractor shall notify the Owner and the Architect of any portion of the work which the Contractor knows or has reason to believe contains asbestos. The Contractor shall take necessary precautions to prevent damage and release of asbestos fibers to the air.
- C. Any asbestos abatement procedures shall be performed by the Owner under a separate contract.

##### 1.3 ASBESTOS CONTAINING MATERIALS AND PRODUCTS

- A. All building construction materials, products, and equipment used in the project shall be asbestos free.
- B. The Contractor shall be responsible for verifying with suppliers and manufacturers that construction materials, products, and equipment used in completion of the project are asbestos free.
- C. The Contractor shall provide certification (typewritten, signed and dated) to the Owner indicating that asbestos free materials, products, and equipment were used in completion of the work.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END OF SECTION

02 26 23-1

## SECTION 02 41 19

### MINOR DEMOLITION FOR REMODELING

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Removal of designated building equipment and fixtures.
- B. Removal of designated construction.
- C. Disposal of materials. Storage of removed materials to be salvaged.
- D. Identification of utilities.
- E. Refer to items as indicated on drawings.

##### 1.2 RELATED SECTIONS

- A. Section 01 11 00 - Summary of Work: Work sequence, Owner's continued occupancy.
- B. Section 01 35 16 - Alteration Project Procedures: Re-installation of removed and stored products.
- C. Section 01 50 00 - Construction Facilities and Temporary Controls: Security at Owner occupied areas, and cleanup during construction.
- D. Section 01 77 00 - Contract Closeout: Project record documents.

##### 1.3 SUBMITTALS FOR CLOSEOUT

- A. Section 01 77 00 - Contract Closeout: Procedures for submittals.
- B. Project Record Documents: Accurately record actual locations of capped utilities, subsurface obstructions, and other items field verified as different from construction documents.

##### 1.4 REGULATORY REQUIREMENTS

- A. The Contractor shall obtain evidence in writing from the Owner prior to any work commencing that no asbestos-containing material exists in the area(s) where demolition or construction is to be performed. A copy of the Owner's asbestos survey must be available on site during any renovation or demolition activity.

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- B. Contractor shall submit Notice of Intent for demolition of existing building to Arkansas Department Of Environmental Quality, Asbestos/Lead Section, P.O. Box 8913, Little Rock, Ar. 72219-8913, no later than (10) ten working days prior to start of demolition.
- C. Conform to applicable code for demolition work, dust control, products requiring electrical disconnection and re-connection.
- D. Obtain required permits from the authorities.
- E. Do not close or obstruct egress width to any building or site exit.
- F. Do not disable or disrupt building fire or life safety systems without 2 days prior written notice to Owner.
- G. Conform to procedures applicable when hazardous or contaminated materials are discovered.

## 1.5 SCHEDULING

- A. Section 01 33 00 - Submittals, 01 32 36 Progress Schedules: Work schedule.
- B. Schedule Work to coincide with new construction.
- C. Describe demolition removal procedures and schedule.
- D. Perform noisy work when the building is unoccupied.

## 1.6 PROJECT CONDITIONS

- A. Conduct demolition to minimize interference with adjacent and occupied building areas.
- B. Cease operations immediately if the structure appears to be in danger and notify Architect/Engineer. Do not resume operations until directed.

## PART 2 PRODUCTS Not Used

## PART 3 EXECUTION

### 3.1 PREPARATION

- A. After date of Notice to Proceed, Contractor to assume responsibility for structures and items to be demolished and removed until such work is completed to the satisfaction of the Owner's representative. After work is started on any building or structure, work shall continue without interruption until complete.
- B. Provide, erect, and maintain temporary barriers and partitions at locations as required and indicated.

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- C. Erect and maintain weatherproof closures for exterior openings.
- D. Erect and maintain temporary partitions to prevent the spread of dust, odors, and noise to permit continued Owner occupancy.
- E. Protect existing materials and items which are not to be demolished.
- F. Prevent movement of structure; provide bracing and shoring.
- G. Notify affected utility companies before starting work and comply with their requirements.
- H. Mark location and termination of utilities.
- I. Provide appropriate temporary signage including signage for exit or building egress. Do not close or obstruct existing building fire exits.

### 3.2 DEMOLITION

- A. Disconnect remove and / or cap designated utilities within demolition areas.
- B. Demolish in an orderly and careful manner. Protect existing supporting structural members.
- C. Remove demolished materials from site except where specifically noted otherwise. Do not burn or bury materials on site.
- D. Remove materials as Work progresses. Upon completion of Work, leave areas in clean condition.
- E. Remove temporary Work.
- F. Wherever a cutting torch or other equipment that may cause a fire is used, provide, and maintain fire extinguishers nearby ready for immediate use. All possible users shall be instructed in the use of the extinguishers.
- G. Hydrants shall be accessible at all times. No debris shall be permitted to accumulate.

### 3.3 CLEAN UP

- A. On completion of work of this section and after removal of all debris, site shall be left in drainable, clean condition satisfactory to Owner's Representative. Clean-up shall include disposal of all items and materials not required to be salvaged as well as all debris and rubbish resulting from demolition operations.



### 3.4 SCHEDULES

- A. Refer to drawings for items called for to be demolished.

END OF SECTION

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## SECTION 03 11 00

### CONCRETE FORM WORK

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. All concrete and related items required to complete the building, provide off-sets, bulkheads, recesses, openings, chases, etc., and install any inserts, sleeves, etc., required by other trades.

##### 1.2 RELATED WORK SPECIFIED ELSEWHERE:

- A. Concrete: Section 03 30 00
- B. Concrete Reinforcement: Section 03 21 00

##### 1.3 WORK INSTALLED BUT FURNISHED BY OTHER SECTIONS:

- A. Built-in anchors, inserts and bolts for connection of other materials.
- B. Built-in sleeves, thimbles, dovetail slots, and water-stops.

##### 1.4 DEFINITIONS:

- A. Architectural Concrete Surfaces: Formed surfaces where appearance is of major importance.
- B. Non-Architectural Concrete Surfaces: Formed surfaces where appearance is not of major importance.

##### 1.5 QUALITY ASSURANCE:

- A. Design Criteria:
  - 1. General: Conform to ACI 347-Current Edition Chapter 1, Design.
  - 2. Plywood: Conform to tables for form design in APA Form V 345- Current Edition, including strength.
- B. Requirements of Regulatory Agencies: Erect forms to meet the requirements of the Local Building Code.
- C. Allowable Tolerances:
  - 1. Non-Architectural Concrete: Conform to ACI 347- Current Edition.
- D. Contractor shall assume full responsibility for earthwork, or an existing structure used as a form and such form work must meet all requirements of this section.

03 11 00-1

## 1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING:

- A. On delivery to the job site, place materials in area protected from weather.
- B. Store materials above ground on framework or blocking and cover with protective waterproof covering providing for adequate air circulation or ventilation.
- C. Handle materials to prevent damage.

## PART 2 PRODUCTS

### 2.1 MATERIALS:

- A. Conform to ACI 347- Current Edition, Chapter 3, Materials and Form Work.

### 2.2 LUMBER:

- A. Softwood framing lumber: Kiln dried, PS 20-70.
- B. Boards less than 1 1/2" thick, used for basic forms and form liners: Kiln dried.
- C. Grade marked by grading rules agency approved by American Lumber Standards Committee.
- D. Light framing or studs for plywood forms, 2 in. to 4 inches in width and thickness, construction grade.

### 2.3 PLYWOOD:

- A. Exterior type softwood plywood, PS 1-66.
- B. Each panel stamped or branded indicating veneer grades, species, type and identification.
- C. Wood faced plywood for architectural concrete surfaces. Panel veneer grades: A-C. Mill-oiled sides and mill-sealed edges of panels.

### 2.4 CORNER FORMERS:

- A. Profile type: chamfered face.
- B. Material: Wood

### 2.5 TIES:

- A. Material: Carbon Steel
- B. Type: Snap ties

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- C. Depth of break back: 1 inch
- D. Maximum diameter: 1/4 inch

## 2.6 FORM COATINGS:

- A. Plywood and wood forms shall be sealed against absorption of moisture from the concrete with an approved non-staining form oil or sealer.
- B. Form sealer, lacquer or any form of release agents containing wax, oil, or other materials that would interfere with adhesion shall not be used on form work for concrete which is to receive exposed aggregate coatings.

## PART 3 EXECUTION:

### 3.1 GENERAL

- A. The design, engineering, bracing and construction of form work shall be the responsibility of the Contractor.
- B. Form work shall conform to shapes, lines and dimensions of members as shown on contract plans and shall be sufficient to prevent mortar leakage and to maintain position and shape during and after placing of concrete. Form work for exposed surfaces shall be constructed of undamaged materials that will result in an unblemished, flush surface when removed.
- C. Shoring and bracing of form work shall be adequate to resist all construction loads, wet concrete, stored and lateral loads due to earthwork. Shoring and bracing of elevated slabs shall remain in place until the concrete has reached a minimum compressive strength of 3,500 psi.
- D. Preparation of forms. Edges of exposed concrete work, exterior and interior shall be pointed up to present a good square appearance.
- E. Provide temporary openings in framework for concrete placement.
- F. Removal of forms is subject to weather conditions after concrete is poured. Remove formwork in manner to ensure complete safety of structure. Do not place building materials on slabs until they are strong enough to carry the imposed load. The contractor shall decide when to remove and accept full responsibility for their removal.
- G. Do not run reinforcement, corner protection angles, or related fixed metal items, embedded in or bonded into concrete through expansion joints. Provide filler strips for expansion joints between slabs on grade and all joints between slabs on grade and vertical surfaces. Construct joints ½ inch wide and full depth of slab unless noted otherwise.

END OF SECTION

03 11 00-3

## SECTION 03 21 00

### CONCRETE REINFORCEMENT

#### PART 1 GENERAL

##### 1.1 Section Includes:

- A. All steel reinforcement, mesh, dowels, and related items to comply with drawings and specifications including materials, labor, and equipment to complete the building and work shown.
- B. Observation and Required Special Inspections

##### 1.2 RELATED WORK SPECIFIED ELSEWHERE:

- A. Section 01 40 00 – Quality Control: Required Special Inspections
- B. Section 03 11 00 - Concrete Form Work: Section
- C. Section 03 30 00 - Cast-In-Place Concrete

##### 1.3 QUALITY ASSURANCE:

- A. Acceptable Manufacturers: Regularly engaged in manufacture of steel bar and welded wire fabric reinforcing.
- B. Installer Qualifications:
  - 1. Three years experience in installation of steel bar and welded wire fabric reinforcing.
- C. Requirements of Regulatory Agencies: Conform to requirements of local Building Code.
- D. Allowable Tolerances:
  - 1. Fabrication:
    - a. Sheared length: + or - 1 inch
    - b. Stirrups, ties and spirals: + or - 1/2 inch
    - c. All other bends: + or - 1 inch
  - 2. Placement:
    - a. Concrete cover to form surfaces: + or - 1/4 inch
    - b. Minimum spacing between bars: + or - 1/4 inch
    - c. Top bars in slabs and beams:
      - (1) Members 8 inches deep or less: + or - 1/4 inch
      - (2) Members more than 8 inches, but not over 2 feet deep: + or - 1/2 inch
      - (3) Members more than 2 ft. deep: + or - 1 inch
    - d. Crosswise of members: Spaced evenly within 2 inches of stated separation.
    - e. Lengthwise of members: + or - 2 inches.

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3. Maximum bar movement to avoid interference with other reinforcing steel, conduits, or embedded items: 1 bar diameter.

#### 1.4 SHOP DRAWINGS:

- A. Comply with Section 01 33 00.
- B. Show sizes and dimensions for fabrications and placing of reinforcing steel and bar supports.
- C. Indicate bar schedule, stirrup spacing, and diagrams of bend bars.
- D. All detailing, fabrication and erection of reinforcing bars shall comply with the A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Structures. (A.C.I. 315). ACI 315R- 18 is titled "Guide to Presenting Reinforcing Steel Design Details."
- E. Manufacturer's Literature: Manufacturer's specifications and installation instructions for splice devices.

#### 1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING:

- A. Deliver reinforcement to project site in bundles marked with durable tags indicating bar size and length.
- B. Handle and store materials to prevent contamination.

### PART 2 PRODUCTS

#### 2.1 MATERIALS

- A. REINFORCING STEEL. Reinforcing steel for concrete shall be deformed, clean, free from rust and new. It shall conform to ASTM Standard A 615 and shall be Grade 60 for bars No. 4 and larger and Grade 40 for No. 3 bars and smaller.
- B. SMOOTH STEEL DOWEL BARS. Plain steel dowel bars for reinforcing concrete slab joints shall meet the requirements of ASTM A 615, Grade 60. These plain round dowel bars shall be free from burrs or other deformations restricting slippage in the concrete.
  1. Smooth Dowel bars shall be held in position parallel to the surface and centerline of the slab by a metal assembly of sufficient strength and anchorage to prevent displacement during the paving operations. Immediately prior to placement of concrete, each bar shall be field coated for a minimum distance of 2 inches greater than half the length of the bar with an approved lubricant. Lubricated ends of adjacent bars shall be on alternating sides of the slab joint.

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- C. WIRE FABRIC. Wire fabric shall be electrically-welded wire fabric of cold-drawn wire (70,000 psi yield point) of the diameter and spacing required and shall conform to ASTM Standard A 185. Welded wire fabric or mesh shall be of gauge and mesh shown on plans and shall conform to "Standard Specifications for Welded Steel Wire Fabric for Concrete REINFORCEMENT: (ASTM A1064-Current Edition). Furnish mesh in flat sheets. ASTM A1064/A1064M – 17 is titled "Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete."
- D. TIE WIRE: FS-QQ-W-461, annealed steel, black, 16 gauge minimum
- E. BAR & WIRE MESH SUPPORTS: Conform to "Bar Support Specifications", CRSI Manual of Standard Practice. Metal bolsters required. No bricks or CMU allowed. Bars supports used over or against concrete surfaces which are exposed shall be plastic protected. The plastic shall have a thickness of 3/32" or greater at points of contact with the form work. The plastic shall extend upward on the wire to a point at least 1/2" above the form work. Provide following support types (CRSI Designation):
1. Woven Wire Mesh: Type "SBU", linear, longest length possible.
  2. Steel reinforcement bars: Type "SBU", length as required to fit in trench and properly support bars.
  3. Note: "SBU" type supports to have two (2) bottom runners and one (1) top runner, all continuous.

### PART 3 EXECUTION

#### 3.1 FABRICATION

- A. In accord with CRSI Manual of Standard Practice.

#### 3.2 INSTALLATION:

- A. Placements:
1. Bar Supports: CRSI Placing Reinforcing Bars (10th Edition)
  2. Reinforcing Bars: CRSI Supports for Reinforcement Used in Concrete (2016). Support footing reinforcement bars with SBU type supports. Space at no more than 4'-0" on center. Support reinforcement bars at each footing corner and intersection. **Rebar chairs will not be acceptable.** For large double layer reinforcement pad footing mats, provide doubling of the SBU supports. Concrete bricks may be used as an option at large double-matted footings, **but only upon Architect's approval.**
  3. Details shall be in accordance with "Building Code Requirements for Structural Concrete" (ACI 318-Current Edition)
  4. **Place sufficient length supports for wire mesh concrete slab reinforcement no more than 3'-0" on center, or stagger at 2'-0" on center. Do not cut supports into small lengths.** Do not extend support through control joints.

B. Steel Adjustment:

1. Move within allowable tolerances to avoid interference with other reinforcing steel, conduits, or embedded items.
2. Do not move bars beyond allowable tolerances without concurrence of Architect/Engineer.
3. Do not heat, bend, or cut bars without concurrence of Architect/Engineer.

C. Concrete covering over reinforcement shall be not less than the following:

1. Where concrete is deposited directly against earth: 3"
2. Where formed concrete surface will be exposed to weather or ground: 2"
3. Where formed concrete surface will not be exposed to weather or ground: for walls and slabs: 3/4"
4. All covering: Nominal bar diameter

D. Splices:

1. Lap splices: Tie securely with wire to prevent displacement of splices during placement of concrete.
2. Splice devices: Install in accordance with manufacturer's written instructions.
3. Welding: Do not weld reinforcement.
4. Do not splice bars except at locations shown on drawings without concurrence of Architect/Engineer.

E. Wire Fabric:

1. Install in longest practicable length.
2. Lap adjoining pieces one full mesh minimum, and lace splices with 16-gauge wire.
3. Do not make end laps midway between supporting beams, or directly over beams of continuous structures.
4. Offset end laps in adjacent widths to prevent continuous laps.
5. Do not continue wire fabric through control joints

3.3 CLEANING:

- A. Remove dirt, grease, oil, loose mill scale, excessive rust, and foreign matter that will reduce bond with concrete.

3.4 . PROTECTION DURING CONCRETING:

- A. Keep reinforcing steel in proper position during concrete placement.

3.5 OBSERVATION AND SPECIAL INSPECTIONS

- A. Reinforcement and placement shall be observed by the Architect/Engineer prior to placing concrete. Inspection of reinforcement for conformance to the construction documents shall be completed by the designated third-party Special Inspector.



### 3.6 INSTALLATION OF MISCELLANEOUS ITEMS:

- A. Contractor shall coordinate and check that all work required to be embedded in concrete is in place prior to pouring. Placement of such work is to be done without disturbing reinforcement in place.

END OF SECTION

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## SECTION 03 30 00

### CAST-IN-PLACE CONCRETE

#### PART 1 GENERAL

##### 1.1 SCOPE:

- A. This Contractor shall furnish all material and labor necessary to complete execution of all concrete portions of this project, including the following items and other items of concrete or cement work which may be essential to complete that portion of the work as shown on the contract drawings and as hereinafter specified.
  - 1. Concrete finish floor slabs.
  - 2. Interior trenching in existing concrete floors.
  - 3. Concrete Accessories
  - 4. Concrete Floor Densifier/Hardener
  - 5. Concrete Minimum Finish Tolerances & Standards
  - 6. Concrete Slab Moisture Mitigation
  - 7. Observation and Required Special Inspections

##### 1.2 RELATED WORK SPECIFIED ELSEWHERE:

- A. Section 01 40 00 – Quality Control: Required Special Inspections
- B. Section 03 11 00 - Concrete Form Work
- C. Section 03 21 00 - Concrete Reinforcement

##### 1.3 QUALITY ASSURANCE:

- A. Standards: Provisions of American Concrete Institute "Building Code Requirements for Structural Concrete" (ACI 318-Current Edition). American Concrete Institute "Specifications for Structural Concrete" (ACI 301-Current Edition), Concrete Reinforcing Steel Institute "Manual of Standard Practice" (Current Edition), American Concrete Institute "Guide to Presenting Reinforcing Steel Design Details" (ACI 315-Current Edition) and " Guide to Formwork for Concrete" (ACI 347-Current Edition) are adopted except that where additional or more stringent requirements are required by these specifications.
- B. Tests: As listed in Standard Practice for Sampling Freshly Mixed Concrete ASTM C 172-Current Edition.
- C. Control Joints and Expansion Joints: Follow Provisions of American Concrete Institute concerning maximum area for placement of expansion and control joints unless shown or noted otherwise on drawings and specifications. If contractor requests adjustments to control joint placement or additional control joints and/or expansion joints, consult Architect prior to concrete placement.

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- D. Slabs must be replaced that have a crack(s) with a width of 0.05" or greater. In high visibility areas all cracks in slabs will be subject to replacement of slab sections at the discretion of the Architect.**

1.4 SUBMITTALS:

- A. Test Reports: Reports of concrete compression, yield, and slump tests.
- B. Certificates:
  - 1. Manufacturer's certification that materials meet specification requirements.
  - 2. Material content per cubic yard of each class of concrete furnished:
    - a. Dry weights of cement.
    - b. Saturated surface-dried weights of fine and coarse aggregate.
    - c. Quantities, type and name of admixtures.
    - d. Weight of water.
  - 3. Ready-mix delivery tickets, ASTM C 94-Current Edition.

1.5 PRODUCT AND ENGINEERING DATA:

- A. Submit data for design mixes, proposed admixtures, etc. per Section 01 33 00.
- B. The Contractor shall be responsible for checking quantities and dimensions in accordance with contract drawings and field conditions. Where discrepancies in dimensions are noted, the Contractor shall notify the Architect of such discrepancies and corrected dimensions noted on submittal drawings.
- C. Contract drawings receive precedence over shop drawings unless authorized in writing.
- D. Shop drawings furnished for reinforcing steel shall contain fabrication details as well as placement drawings which are to be used in conjunction with contract drawings.
- E. Detailing and fabrication of reinforcing shall conform to " Guide to Presenting Reinforcing Steel Design Details", (ACI 315-Current Edition).

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING:

- A. Cement: Store in weather tight enclosures and protect against dampness, contamination, and warehouse set. Any cement damaged by moisture, or which fails to meet any of the specified requirements shall be rejected and removed from the work.
- B. Aggregates:
  - 1. Stockpile to prevent excessive segregation, or contamination with other materials or other sizes of aggregates.
  - 2. Use only one supply source for each aggregate stockpile.
- C. Mixing: Ready-mixed concrete shall be mixed and delivered in accordance with Standard Specifications for Ready-Mixed Concrete" (ASTM C94-Current Edition).

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## 1.7 ENVIRONMENTAL REQUIREMENTS:

- A. Allowable Concrete Temperatures
  - 1. Cold Weather: Minimum 40 degrees. With temperatures lower than 40 degrees, approval by the Architect shall be required.
  - 2. Hot Weather: Maximum 90 degrees F.
- B. Do not place concrete during rain, sleet, or snow unless protection is provided which is approved by Architect.

## 1.8 CONCRETE SLAB MOISTURE MITIGATION:

- A. It will be the responsibility of the Contractor to obtain moisture levels at or below the required percentages as required for installation of all floor covering products by the time the products are ready to be installed. If moisture levels are not reached at the scheduled time to install floor coverings, the Contractor will pursue other means to meet floor covering moisture requirements at no additional cost to owner. This will not be a reason to delay project completion.

## 1.9 CERTIFICATION

- A. Ready Mix concrete batch plant to be NRMCA (National Ready Mixed Concrete Association) certified. Submit proof of certification with submittals.
- B. Concrete Flatwork Finishers to be ACI certified. Submit proof of certification to the Architect for approval.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Concrete:
  - 1. Portland Cement: Type 1 Portland, meeting "Standard Specifications for Portland Cement", (ASTM C150-Current Edition) shall be used.
  - 2. Aggregates: All aggregates shall be limestone, clean, hard strong and durable particles free of chemicals or foreign material that may affect the bonding of cement paste and shall conform to "Specifications for Concrete Aggregates" (ASTM C33-Current Edition). Coarse aggregate gradation shall be within the limits of 1 inch to No. 4 standard sieve analysis. Alternate aggregate materials must be reviewed and approved by the architect.
  - 3. Mixing Water: Water shall be fresh, clean, and potable.
  - 4. Slump: 5 inch maximum: plus, tolerance 0 inches, minus tolerance 2 inches.
  - 5. Mix proportioning: To produce 28-day minimum compressive strength of moist cured laboratory samples. Provide the following minimum compressive strengths at listed locations unless noted otherwise in other specification sections or on drawings:
    - a. 3500 psi for all interior slabs-on-grade.

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- B. Curing Material: Chemical curing products: AmeriPolish PCA curing agent, manufactured by AmeriPolish Architectural Concrete Products, (800) 592-9320. 1100-CLEAR, manufactured by W.R. Meadows Inc, (800)342-5976. L&M CURE, manufactured by Laticrete (800)243-4788. The contractor is to verify with floor covering manufacturers that they will warrant their product if a curing agent is applied where the floor covering is to be installed.
- C. Below-slab vapor barrier shall be as specified in Section 07 10 00, but no less than 15, 10 mils thick.
- D. Reinforcement: See Section 03 21 00

## 2.2 CONCRETE FLOOR DENSIFIER/HARDENER AND SEALER

- A. Penetrating Hardener/Densifier: (Clear liquid reactive lithium-silicate based.)
  - 1. Retroplate 99 by Advanced Floor Products.
  - 2. Consolideck LS, by Prosoco.
  - 3. 3D HS, by Ameripolish
  - 4. Approved alternate by other manufacturer specified herein.
- B. Clear Sealer: Refer to specification 09 91 00 Paint & Finishing

## 2.3 MIXES:

- A. Proportions: Ready-mix concrete shall meet "Specifications for Ready-Mixed Concrete" (ASTM C94-94). Proportions of concrete shall produce the required strength and be workable to the extent that it can be worked into the corners and angles of forms and around reinforcement. Collection of excess free water on the surface will not be permitted nor a segregation of the materials in the mixture.
- B. Free surface moisture on aggregates shall be included as part of the mixing water.
- C. Water-cement ratios for project concrete mix shall be such that the relationship between the required strength and water-cement ratio of ingredients used has been previously established by reliable tests and data. Copies of previous test data, along with design mix data shall be submitted to the Architect by the Contractor for approval. Where such data is not available or is insufficient, water-cement ratios shall meet the requirements of Table 4.2.2 of ACI 318-Current Edition. Cementitious content shall be the total weight of all Portland cement and fly ash in a given mix.
- D. Admixtures shall comply with the ASTM Specifications for Chemical Admixtures. (ASTM C494-Current Edition).
  - 1. Mid-Range Water Reducing Admixture: Mira 110, manufactured by Grace Concrete Products, 877-423-6491, Master Builders Polyheed 1720, manufactured by BASF or approved alternate product. Non-chloride, non-corrosive. Admixture to meet ASTM C494 Type A & F requirements. Comply with manufacturer's instructions for dosage. Admixture to be incorporated with mix at batch plant.

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- a. other admixtures may be used as a concrete mix component only with approval of the Architect.
  - b. Use all admixtures in accordance with recommendations of the manufacturer.
- 2. For concrete containing HRWR admixture (super- plasticizer) when approved by Architect: slump shall be 6"-8".
- 3. In no case shall the use of the admixtures produce a compressive strength less than that specified in this section.
- 4. Fly ash (Type C or F per ASTM C618) may be used as an admixture in concrete which is not exposed to view and does not require surface finish. Use of only one type of fly ash throughout the project shall be permitted. Such areas are limited to footings, below grade foundation walls, filled masonry voids, etc. The use of fly ash as an admixture **shall not be permitted** in concrete where surface finish is required. Such areas as floor slabs, exposed concrete walls, exposed concrete structure, etc., shall not be poured with concrete containing fly ash. Other admixtures may be used only with the approval of the Architect. Each delivery record shall indicate mix design. Concrete will be subject to rejection if mix design is not called out on invoice at time of delivery.
- 5. All concrete installed at the exterior on a permanent basis shall be air entrained. Interior slabs shall not contain air entrainment. If admixture is desired, obtain approval through Architect.
- 6. Air-entraining admixture if used, shall meet "Specifications for Air-Entraining Admixtures" (ASTM C260-Current Edition) and shall produce air content by volume between 5 to 7%.
- E. Use same Portland cement manufacturer throughout project for all interior concrete. Portland cement manufacturer may be different for exterior concrete but must be the same Portland cement manufacturer for all exterior concrete.

## 2.4 ACCESSORIES

- A. Bentonite Waterstops: Surface applied Bentonite waterstop to be Volclay RX Waterstop by American Colloid Company or approved alternate.
- B. Furnish concrete splash block at each downspout approximately 12" wide x 24" long. Slope from back to front for proper drainage.
- C. Safety Nosing
  - 1. Provide nosing inserts manufactured by Wooster Products, Inc., 1000 Spruce Street, PO Box 896, Wooster, OH 44691, Phone 1-800-321-4936, or approved alternate product.
    - a. Type #1: "Spectra" WP2J" profile, black infill. Embed into concrete steps.

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- b. Type #2: "Spectra" WP24A" profile, black infill. Embed into each tread and nose of landings at metal pan stairs.

## PART 3 EXECUTION

### 3.1 OBSERVATIONS AND SPECIAL INSPECTIONS

- A. All reinforced concrete construction shall be performed under the personal supervision of the Building Superintendent. This superintendent shall keep a record of all concrete poured on the job. The record shall show in detail the area placed, the time and date of the placement and weather conditions which existed at the time of the placement. Upon completion of the work, this record of Concrete Placement shall be included in the close out documents.
- B. The Contractor shall plan his work so that adequate time is allowed for the Architect to properly observe all embedded work prior to actual placement of concrete. The Contractor shall notify the Architect of his intent to placement at least 24 hours prior to the time that he estimates the work will be ready for observation. The Contractor shall not place any reinforced concrete without the approval of the Architect.
- C. Contractor shall plan work and coordinate with independent testing lab to be present on-site throughout concrete placement.
- D. Inspection of concrete and concrete preparation for conformance to the construction documents and IBC shall be completed by the designated third-party Special Inspector.

### 3.2 INSTALLATION:

- A. Placing Concrete:
  - 1. Convey concrete from mixer to final position by method which will prevent separation or loss of material.
  - 2. Maximum time permitted before a placement of concrete after adding mixture water shall be as follows:
    - a. Air temperature above 78 degrees F. - 60 minutes.
    - b. Air temperature below 78 degrees F. - 90 minutes.
  - 3. Concrete shall not be placed until an observation by the Architect has been made and reinforcement placement, vapor barrier, etc., is approved.
  - 4. Excavations for footing shall be free of debris, loose dirt, mud and water just prior to placing of concrete.
  - 5. All forms shall be clean of debris and all embedded items shall be in place and secured prior to concrete placement.
  - 6. Wood forms shall be sprinkled with water and wet when concrete is placed, but pooling of water in forms is to be prevented.

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7. Maximum height of concrete free fall, 3 feet.
8. Regulate rate of placement so concrete remains plastic and flows into position.
9. Deposit concrete in continuous operation until panel or section is completed.
10. **Concrete Placement Tolerances & Standards:**
  - a. Submit proposed slab pouring plan for review and approval by Architect prior to forming. For purposes of planning layout, approximately 5,000 to 7,000 sq.ft. is the maximum area allowed. Pending crew size and equipment larger square foot pour areas may be allowed by Architect. Provide diamond plate dowels at construction joints between placements. Refer to Section 03 21 00.
  - b. **Control joints:** Saw cuts are to be performed within 12 hours after finishing. Use 1/8" thick blade, cutting no less than 1/3 of the slab thickness, unless noted otherwise.
  - c. Place control joints for concrete slabs (slab-on-grade and elevated concrete slabs) no more than 8'-0" o.c. each way.
    - i. For other concrete slab thicknesses, refer to structural drawings for control joint spacing.
  - d. **Note: Other placement methods may be considered only with approval of Architect.**
11. Concrete Slab Levelness and Flatness:
  - a. Levelness: FL=35 for polished slabs. FL=20 for non-polished slabs.
  - b. Flatness: FF = 50 for polished slabs. FF = 25 for non-polished slabs
  - c. In areas with floor drains, maintain finished floor level elevation at walls and slope surfaces uniformly to drains.
12. Place concrete in horizontal layers, 18 inches maximum thickness.
13. For concrete on grade or fill, sub-grades shall be properly prepared and maintained as specified previously. Where concrete is placed in direct contact with the earth, the subgrade material shall be wet but not muddy at time of placement.
14. Under all slabs, provide crushed stone choked off with fines per specification Section 31 23 00, meeting ASTM C33-Current Edition, which shall be leveled and compacted. A vapor barrier, as specified in Section 07 10 00 and shown on the drawings shall be placed under all interior slabs-on-grade.
15. Removal of forms. Do not remove forms until concrete has hardened sufficiently to support its own weight and imposed construction loads. Remove forms in such manner as to ensure the complete safety of the structure and to prevent spalling or chipping of concrete. When removing forms, conform to the following:
  - a. Non-Weight Supporting Forms: Form work for columns, walls, sides of beams and other parts not supporting the weight of the concrete may be removed as soon as concrete has hardened sufficiently to resist damage from removal operations, but in no case sooner than 24 hours.

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- b. Weight Supporting Forms: Do not remove form work for beam soffits, supported slabs or other parts which support the weight of concrete until concrete has reached 75% of its specified 28-day strength based on the lab cured concrete cylinder tests, but no sooner than 7 days.
- 16. Wall tie treatment. Wall ties shall be broken off after forms are removed and sealed against water penetration.
- 17. Slope all concrete floors to trench, or floor drains from corners of room, or as shown on drawings. Provide total slope of 1/2", unless noted otherwise on drawings.
- B. Consolidating Concrete at Steel Reinforcement:
  - 1. Use mechanical vibrating equipment for consolidation.
  - 2. Vertically insert and remove hand-held vibrators having minimum 1" diameter at points 18 inches to 30 inches apart.
  - 3. Do not use vibrators to transport concrete in forms.
  - 4. Minimum vibrator speed, 3600 rpm.
  - 5. Vibrate concrete minimum amount required for consolidation, 3 to 5 seconds maximum.
- C. Construction Joints:
  - 1. Clean and roughen the surface of concrete and remove laitance.
  - 2. Wet concrete surface and flush with neat cement grout before placing additional concrete.
  - 3. Construction Joints for slabs on ground (floor joints) shall be plate dowel system. Plate dowel system sleeves shall be attached to 2 x wood members matching the depth of the slab for removal and reuse with steel stakes @ 2'-0" o.c. Form boards must have clean smooth top surface so finishing machines can pass over the top of the form.
  - 4. Construction Joints for elevated slabs shall be a straight edge pour stop. 2 x wood members matching the depth of the slab secured to the metal deck. Wire mesh is not to continue through the form board. Form boards must have clean smooth top surface so finishing machines can pass over the top of the form.
- D. Isolation Joint Material:
  - 1. Provide 1/2" thick closed cell foam material, separating steel or concrete columns from concrete slab at slabs-on-grade and at elevated slabs to prevent bonding and cracking of concrete from structure movement. Hold down from top of slab 1/2" and fill with sealant.
  - 2. At perimeter steel edge angles and other floor or wall penetrations where steel angles or framing exists, apply bituminous material on steel where concrete is to be placed to create bond breaker.

E. Finishing:

1. Floor Finish

- a. Edge forms and intermediate screed strips shall be placed accurately to give the desired elevations and contours. Strike-off templates or straight edges shall be used to give all floor slabs an even surface. Screeds are to be of such type not to interfere with reinforcing.
- b. Troweled finishes shall be applied to floors where concrete is the walking surface, or to have floor coverings. Troweling shall begin after all surface water has disappeared naturally and surface has wood floated to a plane smooth surface. Initial troweling shall be done after concrete has hardened sufficiently to prevent excess fines from working to surface, to produce a smooth surface free from defects and a final troweling shall be done after sufficient hardening to remove trowel marks and give a hard, dense smooth surface. Drying shall be natural. The use of "dryers" by dusting cement or sand is not permitted.
- c. Floors to receive tile or other bonded cementitious finishes shall, after wood floating to a smooth plane surface, be roughened with stiff brushes before final set.

2. Exposed Concrete Surfaces

- a. Areas not receiving special coatings shall be wetted and rubbed with carborundum bricks or other abrasive to give a smooth finish with a uniform color and texture. All edges shall be eased to give a good appearance.

F. Curing: Provisions shall be made for maintaining all concrete surfaces in a continuously moist condition immediately following finishing operations for a period of seven days by one of the following methods when exposed or immediately following removal of forms:

1. Maintain concrete within 40 degrees F. temperature range while curing for length of time shown below:
  - a. Three (3) days for footings.
  - b. Seven (7) days for flatwork.

G Patching: After removal of forms, all honeycomb areas, voids, air pockets, tie holes and surface cracks shall be immediately patched.

H. Application of Floor Densifier/Hardener:

1. Apply to **polished and unpolished** interior concrete slabs and exterior porch or patio areas scheduled to be exposed to view.
2. Apply per manufacturer's instruction to all exposed trowelled concrete floor areas and other areas as called out on finish schedule. Product to be applied as soon after curing period as manufacturer's instructions allow. Application must be smooth and even. No excess application or puddling of the product will be allowed.
  - a. Clean floors where densifier/hardener is applied with manufacturers cleaners.

3.3 TRENCHING OF EXISTING INTERIOR CONCRETE FLOORS

Unless noted otherwise, provide the following:

- A. Sawcut concrete where trenching is required and remove all debris.

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- B. Fill trench with 4" of ½" or less clean washed gravel base and tamp tightly into place in no more than 8-inch lifts.
- C. Place 15 mil vapor barrier per Section 07 10 00 over gravel base. Provide 12 inches long standard no.4 rebar, drilled and friction-set 4 inches into sides of existing cut concrete slab at maximum spacing of 24 inches o.c. **Place continuous strip of bentonite along each side of trench on top of vapor barrier.**
- D. Place 6 x 6"-W1.4 x W1.4 WWF and pour minimum 4" thick, 3000 p.s.i. concrete. Finish as required for exposed finish of for floor finish scheduled to be installed.
- E. Provide sawcut control joints at no more than 8'-0" on center.

### 3.3 ACCEPTANCE OF CONCRETE:

- A. Concrete not meeting the strength requirements of these specifications shall be tested at critical locations designated by the Architect by a laboratory approved by the Architect. These tests shall be at the Contractor's expense. Such tests performed shall be in accordance with the Building Code Requirements for Structural Concrete: (ACI 318-Current Edition). If these tests still indicate below required strengths, or if inconclusive, then the Contractor shall proceed at his own expense as follows:

Remove and replace or reconstruct all under strength concrete in an approved manner or perform load tests in accordance with the "Building Code Requirements for Structural Concrete" (ACI 318-Current Edition). If load test results are not acceptable then Contractor shall remove and replace or reconstruct all designated under strength concrete to meet requirements of these specifications.

- B. Concrete improperly placed, cured, reinforced, damaged or not meeting testing tolerances shall be considered potentially deficient and shall be tested and replaced if necessary, in accordance with Paragraph a) above.
- C. Concrete not meeting the tolerances of "Recommended Practice for Concrete Formwork: (ACI 347) and concrete not formed as shown on plans shall be considered as not acceptable and shall be removed and replaced by Contractor at his own expense unless Architect permits patching and repairing of such work. Finished repair work shall meet criteria mentioned above or shall be removed and replaced.

### 3.4 TESTING AND SAMPLING:

- A. Slump Tests: A minimum of two (2) slump tests shall be made each day concrete is placed with one (1) test being made at the time test cylinders are made. Slump tests are to be made in accordance with "Standard Test Method for Slump of Hydraulic-Cement Concrete" (ASTM C-143-Current Edition). Where slump exceeds five inches (5") or the average 28 day strength of the three (3) test specimens falls below the strength specified for the class of concrete tested, or below proportional minimum seven (7) day strengths, (80 percent of specified 28 day strength) the proportions, water content or temperature

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conditions shall be changed to secure the required properties, and, at the discretion of the Architect, portions of the structure containing such concrete shall be removed and replaced, or reinforced as necessary. No concrete below 3" slump shall be accepted. Follow guidelines of ASTM C94 for water added to mix on site. Do not exceed design specifications.

- B. Strength Tests. The compression strength test shall be performed in accordance with "Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens" (ASTM C39-Current Edition). Samples for concrete cylinders shall be made in accordance with "Method of Sampling Fresh Concrete" (ASTM C172-Current Edition), and test cylinders shall be prepared, and laboratory cured in accordance with "Method of Making and Curing Concrete Compression and Flexure Test in the Field" (ASTM C31-Current Edition).
- C. Cylinders. Two (2) cylinders from the same batch shall be prepared by a certified technician for each 50 cubic yards or fraction thereof placed, but not less than One (1) cylinders for each day of concrete operations shall be made. **Location of batch as to placement on the subject shall be noted on report, and cylinders so designated. Maximum and minimum initial curing temperatures as recorded per ASTM C31 shall be included in this report.** No tests shall be required for sidewalks. One (1) cylinder shall be tested at seven (7) days and three (3) at 28 days. **If cylinder break is lower than required, the testing company to contact Contractor and Architect immediately for direction. The remaining cylinder shall be maintained in proper curing conditions until specified 28-day compressive strength has been affirmed.**
- D. A minimum of nine (9) cylinders shall be tested for each class of concrete used on the project and the average of any three (3) consecutive strength tests at 28 days shall be equal to or greater than the specified strength with no test less than 500psi below the design strength.
- E. The contractor shall bear expense of all testing by a Laboratory approved by the Architect prior to award of the contract. Testing results shall be sent directly to the Architect's office, Contractor, and the Concrete Producer. Architect is to be notified of high slump concrete or low early strength (<75% of design at 7 days) immediately.
- F. Floor Flatness and Floor Levelness test shall be performed in accordance with "Standard Test Method for determining FF Floor Flatness and FL Floor Levelness Numbers" (ASTM E1155- Current Edition) for entire interior slab on grade.
- G. Floor Flatness test shall be performed in accordance with "Standard Test Method for determining FF Floor Flatness Numbers" (ASTM E1155- Current Edition) for entire elevated slab.

END OF SECTION

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## SECTION 04 05 13

### MORTAR

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Examine all Drawings, General Conditions, Supplementary Conditions, and General Requirements which are part of this Contract. Furnish all labor, materials, and equipment necessary for masonry mortar.

##### 1.2 RELATED SECTIONS

- A. Section 04 22 00: Concrete Unit Masonry

##### 1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM-most recent issue)
  - 1. ASTM C94, Specification for Ready-Mixed Concrete
  - 2. ASTM C109 Specification for Compressive Strength of Hydraulic Cement Mortars.
  - 3. ASTM C143, Test Method for Slump of Hydraulic Cement Concrete
  - 4. ASTM C144, Specification for Aggregate for Masonry Mortar
  - 5. ASTM C150, Specification for Portland Cement
  - 6. ASTM C207, Specification for Hydrated Lime for Masonry Purposes
  - 7. ASTM C270, Specification for Mortar for Unit Masonry
  - 8. ASTM C404, Specification for Aggregates for Masonry Grout
  - 9. ASTM C476, Specification for Grout for Masonry
  - 10. ASTM C780, Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry
  - 11. ASTM C1019, Specification for Method of Sampling and Testing Grout
  - 12. ASTM C1142, Specification for Ready-Mixed Mortar for Unit Masonry
  - 13. ASTM C1329, Specification for Mortar Cement
- B. International Masonry Industry All-Weather Council (IMIAC): Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.
- C. International Masonry Industry All-Weather Council (IMIAC): Recommended Practices and Guide Specifications for Hot Weather Masonry Construction.

##### 1.4 SUBMITTALS

- A. Comply with Section 01 33 00.

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- B. Submit Certification of mortar components and type for pre-blended masonry mortars such as “Spec Mix” or other approved manufacturers, dated within 12 months of contract date.

## 1.5 GENERAL REQUIREMENTS

- A. Deliver materials in unbroken bags or containers, plainly marked and labeled with Manufacturer's name, brand and mortar type.
- B. Storage of Materials
  - 1. Cement and hydrated lime: Stored in a manner to afford ready access for inspection and in suitable building to protect material from dampness. Insure protection against inclusion of foreign materials in cements and limes. MASONRY CEMENT WILL NOT BE ALLOWED IN MORTAR.
  - 2. Aggregates - use only clean, dry materials. Use no frozen materials.
- C. Build in all sheet metal work, anchors, anchor bolts, hangers, sleeves, thimbles, frames, structural members, etc. as shown and as required for other trades.
- D. Environmental Requirements: See Section 04 22 00 for temperature and laying restrictions.
  - 1. Cold Weather Requirements
    - a. Comply with IMIAC - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.
    - b. When the ambient air temperature is below 40 degrees F, heat mixing water to maintain mortar temperature between 40 degrees F and 120 degrees F until placed. When the ambient air temperature is below 32 degrees F and holding, dropping, or predicted to drop below 32 degrees, no mortar is to be mixed.
  - 2. Hot Weather Requirements
    - a. Comply with IMIAC - Recommended Practices and Guide Specifications for Hot Weather Masonry Construction.
- E. Remove any materials that have partially hardened or set. DO NOT USE.
- F. Build in door and window frames and their anchors. Slush steel door frame jambs and heads full of mortar. Slush cells full of mortar where excessive cutting for conduit or other devices has weakened masonry.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- A. The mortar for all masonry, block, and brick shall meet the minimum requirements of the International Building Code.

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- B. Mortar shall conform to the minimum proportion requirements given in Table II of ASTM C270, based on 28-day laboratory testing ONLY. Select mortar type based on the criteria below:
  - 1. Type "N": For non-load-bearing walls no higher than 20'-0".
- C. The mortar for all masonry shall be standard gray color.
- D. Provide only pre-mixed mortar of types specified manufactured by "Spec-Mix" or approved alternate substitution. **Mixing of any mortar on-site will not be allowed.**
- E. Use same manufacturer's products throughout project.
- F. Use of anti-freeze compound or other additives are not to be used without written approval of the Architect.
- G. Bond Beams and cells with vertical reinforcement shall be filled with 2000 psi concrete - NOT MORTAR.

## 2.2 MORTAR MATERIALS

- A. Portland Cement: ASTM C150, normal. Type I or III; gray color. Fly ash, slag, and pozzolans are NOT permitted as substitutes for Portland Cement.
- B. Hydrated Lime: ASTM C 207, Type S, and UBC 21-13 hydrated lime for masonry purposes.
  - 1. Manufactured by Chemstar of approved equal.
  - 2. For pigmented mortars, use colored Portland cement-lime mix of formulation required to produce color indicated, or if not indicated, as selected from manufacturer's standard formulations. Pigments shall not exceed 10 percent of Portland cement by weight for mineral oxides nor 2 percent for carbon black.
- C. Aggregate for Mortar: ASTM C 144; except for joints less than 1/4-inch (6.5 mm), use aggregate graded with 100 percent passing the No. 16 (1.18 mm) sieve.
  - 1. Colored-Mortar Aggregates: Natural-colored sand or ground marble, granite, or other sound stone, as required to match Architect's sample.
- D. Aggregate for Grout: ASTM C404 with 100 percent passing the 3/8" (9.5mm) sieve.
- E. Admixtures: NOT permitted unless approved by the Structural Engineer of Record, prior to construction.
  - 1. Calcium Chloride is NOT permitted in mortar. Admixtures and other chemicals containing Thiocyanates, Calcium Chloride or more than 0.1 percent chloride ions are NOT permitted.
- F. Water: Potable

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## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Examine conditions with installer present, for compliance with requirements for installation tolerances and other specific conditions, and miscellaneous conditions affecting performance of unit masonry.
- B. Examine rough-in and built-in construction to verify actual locations of piping and other penetrations prior to installation.

### 3.2 INSTALLATION

- A. Maintain an ambient temperature of the materials in contact with the mortar, of NOT less than 40 degrees F, unless otherwise recommended by the International Masonry All-Weather Council (IMIAC). Maintain this temperature limitation at every area and elevation of weather enclosures, when used.
- B. Lay solid brick-sized masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. DO NOT slush head joints.
- C. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course on footings, piers, columns, and pilasters, and where adjacent to cells or cavities are to be reinforced or filled with concrete or grout. For starting course on footings where cells are not grouted, spread out full mortar bed including areas under cells.
- D. In existing construction, maintain joint widths shown, to match existing coursing, except for minor variations required to maintain bond alignment. If not shown, lay walls to match existing or 3/8" joints.
- E. Cut joints flush for masonry walls that are to be concealed or to be covered by other materials, unless otherwise indicated.
- F. Remove masonry units disturbed after lying; clean and reset in fresh mortar. DO NOT pound corners or jambs to shift adjacent stretcher units that have been set in position. If adjustments are required, remove units, clean off mortar and reset in fresh mortar.
- G. Grouting: DO NOT place grout until the entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.
- H. Refer to Section 04 22 00 for maximum allowable grouting heights.



### 3.3 MIXING OF MORTAR

- A. Machine mix in an approved type of mixer in which quantity can be accurately and uniformly controlled. Only small batches of mortar may be mixed at one time. Mixing time is not less than five (5) minutes and not less than three (3) minutes after water has been added. If hydrated lime is used, use dry-mixed method (optional) of first consistently mixing hydrated lime into putty.
- B. Dry Blended in Silos: Mixing shall be done using a continuous, self-cleaning mixer mounted at the apex of the silo. The water flow valve shall be set to provide desired workability.
- C. Keep all mixers and equipment clean. Do not deposit mortar on the ground.

### 3.4 WORKMANSHIP

- A. Mortar having stood for more than one hour shall not be used or re-tempered.
- B. Lay no masonry when danger of freezing conditions exists before mortar sets.

END OF SECTION

04 05 13-5

## SECTION 04 22 00

### CONCRETE UNIT MASONRY

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Concrete masonry units.
  - 2. Reinforcement, anchorages, and accessories.
- B. Products Installed but not Furnished Under this Section:
  - 1. Section 03 21 00 - Concrete Reinforcement
  - 2. Section 05 50 00 - Metal Fabrications: Loose steel lintels.
  - 3. Section 07 62 00 - Sheet Metal Flashings and Trim.
- C. Related Sections:
  - 1. Section 01 40 00 – Quality Control: Required Special Inspections
  - 2. Section 03 30 00- Cast-In-Place Concrete: grout.
  - 3. Section 04 05 13 – Mortar

##### 1.2 REFERENCES

- A. ASTM C90 - Hollow Load-Bearing Concrete Masonry Units.
- B. ASTM C145 - Solid Load-Bearing Concrete Masonry Units.
- C. Hot and Cold Weather Masonry Construction Guide - Recommended Practices and Guide Specifications for Hot & Cold Weather Masonry Construction.
- D. ASTM A153 – Zinc Coating (Hot Dip)

##### 1.3 PERFORMANCE REQUIREMENTS

- A. Provide unit masonry that develops the following installed compressive strengths (fm) at 28 days.
  - 1. For Concrete Unit Masonry: As follows, based on net area:
    - a.  $F'm = 2000 \text{ psi (13.1 Mpa)}$ .

##### 1.4 SUBMITTAL

- A. Submit samples of actual units to be used for Architect's approval.
- B. Submit to Architect the insulation type proposed.
- C. Submit mix design for concrete grout

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## 1.5 ENVIRONMENTAL REQUIREMENTS

- A. Cold Weather Requirements: Hot and Cold Weather Masonry Construction Guide - Recommended Practices and Specifications for Cold Weather Masonry Construction.
- B. Lay no masonry when the temperature is below 40 degrees F. without Architect's permission. Such permission shall not relieve the Contractor of responsibility for the work, however. If permitted to work below 40 degrees F., but above 32 degrees F., make provisions to heat and dry materials and protect work from freezing during the installation and curing period. No masonry is to be laid when temperatures are holding, dropping or are predicted to go below 32 degrees F. unless heated protection is provided during installation and curing period and has been approved by the Architect.
- C. External exposed CMU: Provide units with integral water repellent

## PART 2 PRODUCTS

### 2.1 CONCRETE MASONRY UNITS

- A. Hollow Load Bearing Units: ASTM C90, Grade N, Type 1:
  - 1. Common CMU: Light weight (ASTM C331) above grade; normal weight (ASTM C331) below grade.
- B. Solid Load-Bearing Units: ASTM C145, Grade N, Type 1:
  - 1. Common CMU: Light weight (ASTM C331) above grade; normal weight (ASTM C331) below grade.
- C. Masonry Units: Modular units sized as required to achieve details shown; provide special units for bond beams, control and expansion joints, and lintels.
  - 1. Common CMU: Where indicated on drawings.
- D. Quality Control: All standard masonry units shall be manufactured by one manufacturer and shipped from the same plant. All units are subject to inspection and rejection by the Architect for defects such as excessive porous surface, chipped corners, irregular faces or sizes, etc. Sample units submitted shall be retained and shall set the standard for quality expected. Meeting ASTM C90 minimum requirements is not considered to be adequate in the areas mentioned.

### 2.2 REINFORCEMENT AND ANCHORAGES

- A. **CMU Horizontal Joint Reinforcement:** Install horizontal joint reinforcement 16 inches on center, except space at 8 inches in parapet walls and below finished floor, or where otherwise indicated on Drawings. 120 Truss or 220 Ladder-Mesh LoxAll design, manufactured by Hohmann & Barnard, Inc., or approved alternate. Minimum 9-gauge welded steel wire; hot-dip galvanized after fabrication to 1.5 oz. Per ASTM A153 Class B-2 for use in exterior walls, mill galvanized wire for interior walls. Reinforcement width to be 1 1/2 to 2 inches less than wall thickness.

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## 2.3 ACCESSORIES

- A. Joint Filler: Closed cell foam, oversized 50 percent; self-expanding joints.
- B. Preformed Control Joint Filler:
  - 1. VS Series by Hohmann & Barnard, Inc.
  - 2. No. 2901 by Wire Bond.

## PART 3 EXECUTION

### 3.1 PREPARATION

- A. Verify items provided by other sections of work are properly sized and located.
- B. Establish lines, levels, and coursing. Protect from disturbance.
- C. Provide temporary bracing during erection of masonry work. Maintain in place until building structure provides permanent bracing.

### 3.2 COORDINATION WITH OTHER TRADES

- A. It will be a requirement of this section to verify and coordinate work with other trades and specification sections. Do not begin work on concrete slabs on grade or elevated concrete slabs until minimum strength and cure time has been reached.

### 3.3 COURSING

- A. Place masonry to lines and levels indicated.
- B. Maintain masonry courses to uniform width. Make vertical and horizontal joints equal and of uniform thickness.
- B. Lay concrete masonry units in running bond unless adjoining work is involved, or called out on drawings otherwise. If adjoining existing work, match existing bond unless called out on drawings otherwise. Course one block unit and one mortar joint to equal 8 inches vertically. Form flush mortar joints where joint will be covered by other construction. **Provide tooled joints** where wall will be left exposed and painted, or is a finished product, unless specifically called out to be otherwise.

### 3.4 PLACING AND BONDING

- A. Lay solid concrete masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not slush head joints. Remove excess mortar.

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- B. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course on footings and foundation walls and in all courses of piers, columns and pilasters, and where adjacent to cells or cavities to be reinforced or filled with concrete or grout. For starting courses on footings where cells are not grouted, spread out full mortar bed, including areas under cells.
- C. Fully bond intersections, and external and internal corners.
- D. Do not shift or tap masonry units after mortar has taken initial set. Where adjustment must be made, remove mortar and replace.
- E. Perform job site cutting with proper tools to provide straight unchipped edges. Take care to prevent breaking masonry unit corners or edges.
- F. Isolate masonry partitions from vertical structural framing members with a control joint.
- G. Where masonry is installed, all vertical and horizontal joints to align according to bond types. Where differing masonry types are installed in same wall, joints are to align between each masonry unit type unless noted otherwise.

### 3.5 TOLERANCES

- A. Alignment of Pilasters: Maximum 1/4 inch from true line.
- B. Variation from Unit to Adjacent Unit: 1/32 inch.
- C. Variation from Plane of Wall: 1/4 inch in 10 feet and 1/2 inch in 20 feet.
- D. Variation from Plumb: 1/4 inch per story non-cumulative.
- E. Variation from Level Coursing: 1/8 inch in 3 feet; 1/4 inch in 10 feet; 1/2 inch maximum.
- F. Variation of Joint Thickness: 1/8 inch in 3 feet.

### 3.6 REINFORCEMENT AND ANCHORAGES

- A. Install horizontal joint reinforcement 16 inches on center, except space at 8 inches in parapet walls and below finished floor, or where otherwise indicated on Drawings.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend 24 inches minimum each side of opening. Place joint reinforcement continuous in first and second joint below top of wall.
- C. Lap joint reinforcement ends minimum 6 inches. Discontinue at control joints. Extend 24 inches minimum each side of openings. Place reinforcing bars supported and secured against displacement. Maintain position within 1/2 inch of true dimension.

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- D. Verify that anchorages embedded in concrete or attached to structural steel members are properly placed.
- E. Reinforce joint corners and intersections with strap anchors 16 inches on center.

### 3.7 BUILT-IN WORK

- A. As work progresses, build in metal door frames, fabricated metal frames, window frames, wood nailing strips, anchor bolts, plates, and other items to be built in the work supplied by other Sections.
- B. Build in items plumb and level.
- C. Bed anchors of metal door and glazed frames in mortar joints. Fill masonry cores with grout minimum 12 inches horizontally from framed openings.
- D. Build in door and window frames and their anchors. Slush steel door frame jambs and heads full of mortar. Slush cells full of mortar where excessive cutting for conduit or other devices have weakened masonry
- E. Do not build-in organic materials subject to deterioration.

### 3.8 CUTTING AND FITTING

- A. Cut and fit for chases, pipes, conduit, sleeves, and grounds. Cooperate with other Sections of work to provide correct size, shape, and location.
- B. Obtain approval prior to cutting or fitting any area not indicated or where appearance or strength of masonry work may be impaired.
- C. **Do not** thin CMU walls to accommodate plumbing piping, electrical conduit of other items routed in CMU walls. Consult Architect if conditions are found that do not allow proper installation of CMU.

### 3.9 CLEANING

- A. Remove excess materials, mortar droppings. Remove mortar droppings on connecting or adjoining work before its final set.
- B. Exposed Masonry: At completion of work, point holes in joints of exposed masonry surfaces, completely fill with mortar, tool properly. After pointing has set, hardened, wet exposed masonry surfaces. Clean soiled surfaces with a non-acidic solution which will not harm masonry or adjacent materials equal to Sure Klean 600 manufactured by ProSoCo, Inc. Cleaner must be approved by CMU manufacturer. Apply with stiff fiber brush, leave masonry clean, free of mortar daubs, with tight mortar joints throughout. Immediately after cleaning, rinse masonry surfaces with clear water. **DO NOT USE PRESSURE SPRAY WASHER TO CLEAN OR RINSE OFF MASONRY.**

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- C. Protect all other trade's work and other items set into wall.
- D. Remove, replace defective materials, correct defective workmanship, and leave masonry clean.
- E. Replace defective mortar. Match adjacent work.
- F. Remove excess mortar and smears.
- G. Use non-metallic tools in cleaning operations.

### 3.10 PROTECTION

- A. Maintain protective boards at exposed external corners which may be damaged by construction activities.
- B. Provide protection without damaging completed work.
- C. At day's end, cover unfinished walls to prevent moisture infiltration. Secure cover down to prevent blow-off and maintain protection for fresh masonry work.

### 3.11 OBSERVATION AND SPECIAL INSPECTIONS

- A. CMU placement and CMU reinforcement and placement shall be periodically observed by the Architect/Engineer during laying of CMU units. Inspection of CMU placement and CMU reinforcement and placement for conformance to the construction documents shall be completed by the designated third party Special Inspector at a minimum frequency of two (2) times per week from start of production.
- B. Special Inspector Qualifications: Latest Edition of Arkansas Fire Prevention Code/ IBC. Allowable certifications include: Arkansas Licensed PE, Arkansas EIT working under a PE, ICC masonry certified technician, or NCMA (National Concrete Masonry Association) certified technician.

END OF SECTION

04 22 00-6

## SECTION 06 10 00

### ROUGH CARPENTRY

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Furnish and install all wood framing members, stripping, blocking, grounds, pressure treated wood, fire treated wood, equipment curbs and cants, and other miscellaneous.

##### 1.2 PRODUCT HANDLING

- A. Protection:
  - 1. Store all materials in such a manner as to ensure proper ventilation and drainage, and to protect against damage and the weather. Store in a well-ventilated building where not exposed to extreme changes of temperature and humidity.
  - 2. Keep all materials clearly identified with all grade marks legible. Keep all damaged material clearly identified as damages, and store separately to prevent its inadvertent use.
  - 3. Do not allow installation of damaged or otherwise non-complying material.
  - 4. Use all means necessary to protect the installed work and materials of all other trades.
  - 5. Protect all metal products with adequate waterproof outer wrappings.
  - 6. Use extreme care in off-loading of lumber to prevent damage, splitting, and breaking of materials.

##### 1.3 ECOLOGICAL PRESERVATION

- A. Contractor will not use old growth Western Red Cedar, Sitka Spruce, Western Hemlock, Pacific Fir, or Coastal Redwood unless it is recycled. Only upon written request, under unusual circumstances, will use of any of these species be considered by Architect.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. All materials herein specified: The best of their respective grades, conforming to grading rules of lumber association under which they are produced, thoroughly seasoned or kiln dried. Protect and cover in shipment and on job site.
- B. Framing lumber and miscellaneous blocking - No. 2 Grade Douglas Fir, or Southern Pine, S4S in conformance with ASTM 245- 69 grading, or as otherwise specified on plans.
- C. Pressure treated wood:
  - 1. Use arsenic-free pressure treated lumber, Copper Azole Type-B (CA-B), Alkaline Copper Quat (ACQ), or approved equivalent product conforming to American Wood Preservers Association standards for use above ground in all places where lumber is used in contact with masonry work and concrete. Where used with roofing, at roof curbs, parapet caps,

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- roof edge member or roof cant strips, whether noted on plans or not, type MCA treatment is acceptable.
2. Use minimum 0.40 Lbs./Cu. Ft. retention for ground contact lumber, and 0.25 for above ground applications.
  3. Pressure treated wood shall leave no apparent odor or stain in the completed work.
  4. Fasteners shall be stainless steel or hot-dipped, galvanized conforming to ASTM A-153.
- D. Fire treated wood: All concealed lumber, wood products and wood materials used in construction that are to remain as part of the finished work, shall be fire retardant treated, Pyro-Guard manufactured by Hoover Treated Wood Products, PO Box 7807, Pine Bluff, AR 71611 (501)247-3511, or approved alternate. Flameproof treatment shall be tested to produce a flame spread of 25 or less as determined by Underwriters Laboratories in the extended 30 minute duration of ASTM E-84, "Standard Test Method for Surface Burning Characteristics of Building Materials.". Provide with 20 year manufacturer's warranty.
1. For IBC type I and type II construction, concealed lumber used for blocking in attachment of handrails, toilet accessories, markerboards, etc. is not required to be fire treated.
  2. Isolate metal materials coming in contact with Fire treated wood with 30# felt.
- E. Plywood and Lumber:
1. Plywood to meet performance standards for its type as described in Product Standard PS 1 for Douglas Fir plywood. Provide exterior type plywood for permanently exposed plywood in outdoor applications.
  2. Southern Yellow Pine - No. 2 KD, Douglas Fir or Western Hemlock - Construction Grade
  3. Plywood not otherwise specified or not on the drawings: Douglas Fir or Southern Yellow Pine panels, C-D grade for concealed applications and A-C grade for exposed applications, meeting US product standard PS1. Furnish plywood for underlayment using underlayment grade with exterior glue.
  4. Interior Plywood: Thickness & type indicated on drawings;  
APA A-A INT, where exposed two sides and painted finished is called for.  
APA N-N INT, where exposed two sides and stained or natural finish is called for.  
APA A-D INT, where exposed one side (ie. shelving, panel boards, etc.)

## PART 3 EXECUTION

### 3.1 WORKMANSHIP

- A. Framing: Frame, fit closely, set framing according to required lines, levels and secure rigidly in place.
- B. Grounds and Blocking: Provide wood grounds and blocking of size and shape required to secure other work or equipment in place. **NO METAL STRAPPING WILL BE ACCEPTED AS A SUBSTITUTE FOR WOOD BLOCKING.** Set grounds true to line, level or plumb and well secured in place. Wood blocking or nailer on steel framing shall be bolted thereto. Provide solid grounds blocking in walls for wall hung or attached items and equipment (i.e. cabinets, countertop brackets and supports, wall mounted hardware, coat hooks, toilet accessories, etc.) Also provide wood blocking in walls and/or ceilings for all owner-provided items. Verify and coordinate with owner actual locations.

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- C. Nails, spikes, screws and other anchoring items shall be of the approved size and type to secure the member in place if not called out on drawings.
- D. If approved by Architect, fir dimensional lumber and fir plywood may be used in lieu of pressure treated wood in concealed areas unless pressure treated wood is required by code. If pressure treated wood is used, secure with 304 or 316 stainless steel fasteners or other corrosive-resistant fasteners approved for use with pressure treated wood and approved by manufacturer. Install 30# felt paper over metal substrates or coat with bituminous material prior to installation of pressure treated wood products.
- E. Metal products in contact with pressure-treated wood must be corrosion resistant. Examples include flashing, termite shields, fasteners (e.g. nails, screws, and bolts), and all connecting hardware (e.g. joist hangers, straps, hinges, post anchors, and truss plates). Provide noncorrosive separation material between such as felt paper, bituminous material, etc.
- F. Defective materials shall be removed from the job site and replaced with acceptable materials at no additional cost to the Owner.

### 3.2 GRADE STAMPS

- A. Framing lumber: Identify all framing lumber by the grade stamp of the Southern Pine Inspection Bureau.
- B. Plywood: Identify all plywood as to species, grade, and glue type by the stamp of the American Plywood Association.
- C. Other: Identify all other materials of this Section by the appropriate stamp of the agency listed in the reference standards.

### 3.3 CLEAN UP

- A. Keep the premises in a neat, safe, and orderly condition at all times during execution of this portion of the work. Clean up and remove from site the debris, cut ends, and sawdust.

END OF SECTION

06 10 00-3

## SECTION 06 20 23

### FINISH CARPENTRY

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Furnish and install items of finish carpentry and miscellaneous millwork, including all finish trim; fitting and installing all wood doors and frames; installing all finish hardware, and construction of job-built shelving.

##### 1.2 RELATED WORK

- A. Section 06 10 00 - Rough Carpentry
- B. Section 08 14 16 - Wood Doors
- C. Section 08 71 00 - Finish Hardware

##### 1.3 SHOP DRAWINGS

- A. Submit complete shop drawings for Architect's approval prior to fabrication of any millwork or trim.

##### 1.4 REFERENCES

- A. Comply with ADA Accessible Guidelines in regard to accessible or handicapped features.

##### 1.5 FIELD DIMENSIONS & COORDINATION

- A. The millwork manufacturer is responsible for details and dimensions set in accordance with field measurements. The Contractor and the Millwork Supplier shall coordinate and correct any discrepancies prior to fabrication or placement of any work.
- B. Coordinate clearances of door hardware items with lites and lite frames.

##### 1.6 PRODUCT HANDLING AND DELIVERY

- A. Contractor and Millwork Supplier are to coordinate all phases of the work provided in under this section to ensure timely delivery and setting after building is sufficiently dry and climate controlled to protect the work.

## PART 2 PRODUCTS

### 2.1 FINISH WOOD MATERIALS:

- A. When painted, material shall be close grained, smooth surface, suitable for painting. Species to be Poplar or other similar closed grain species with Architect's approval.
- B. All materials shall be of select material, with no splits, knots, or other defects.

### 2.2 LAMINATED PLASTICS

- A. Furnish laminated plastic as detailed on drawings in strict accordance with manufacturer's recommendations. Joints shall not be located in random fashion and entire, one piece application shall be used wherever possible. Provide plastic edges where shown. Laminated plastic: "Formica", "Pionite", "Nevamar", "Wilson Art", or alternate approved by Architect. Color, pattern and finish shall be as selected by Architect.

## PART 3 EXECUTION

### 3.1 WORKMANSHIP

- A. Frame, fit closely, and set accurately to required lines, levels, and secure rigidly in place.
- B. All interior trims are to be sanded smooth at job so that no sand marks, scratches, blemishes, etc., are noticeable after finish is applied.
- C. All interior trim against concrete or masonry or solid backings is to have hollow backs.
- D. Joints are to be mitered or angled to conceal shrinkage. Butt joints are not acceptable.
- E. Trim and moldings are to be set with finish nails, screws or glue, where required. All fastening devices are to be set and holes filled with similar material not noticeable after finish.

### 3.2 FINISH HARDWARE: See Section 08 71 00.

- A. Installation only by this section. Cut, fit, and install without marring or injuring work. Examine hardware at completion of work; test, oil, grease, adjust, and perform all necessary work to insure correct operation.
- B. Doorknobs, pulls, kick plates, push plates, etc., are to be fitted and installed before finishing, then removed and re-installed after finish work is completed.

### 3.3 WOOD DOORS: See Section 08 14 16

- A. Installation only under this section. Fit, hang, trim as required.

B. Provide the following clearances:

Sides	1/16"
Top	1/16"
Base (with threshold)	3/16"
Base (without threshold)	3/8 "

C. Install hardware as specified. Locksets and latches to have centers at 38" above finish floor unless otherwise stated. Coordinate location of locks with approved Hardware Schedule.

END OF SECTION

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## SECTION 06 41 16

### CABINET WORK AND SHELVING (*LAMINATED PLASTIC*)

#### PART 1 GENERAL

##### 1.1 SCOPE:

- A. Furnish labor and materials for fabrication and installation of high-pressure laminate and/or thermally fused laminate (melamine) covered cabinetwork indicated and specified, including cabinet hardware.
- B. Thermoset Solid Polymer solid surface countertops

##### 1.2 RELATED SECTIONS

- A. Section 06 10 00 - Rough-in Carpentry - Blocking
- B. Section 09 65 13 – Rubber Base

##### 1.3. QUALITY ASSURANCE

- A. All cabinets and millwork to conform to the **Architectural Woodwork Institute (AWI)** quality standards, **Custom Grade** in addition to requirements as specified this section.
- B. Manufactured casework is approved, but must meet requirements as shown on drawings and as specified in this section.
- C. Manufacturers, suppliers and fabricators to have minimum 5 years in the manufacturing and installation of cabinets and millwork.
- D. Subcontractor / supplier providing work under this section will fabricate and install work specified in this section with their company's own installers and fabrication department, employed by the company. **Subcontracting of fabrication and installation will not be allowed unless approved by Architect prior to bid.**
- E. ADA-Americans with Disabilities Act requirements: The special requirements of ADA shall be a requirement of this section and where specifically indicated on drawings in detail or notation. Comply with Federal Register published September 15, 2010, Title II (28 CFR Part 35) and Title III (28 CFR, Part 36), rules and regulations.
- F. Comply with State of Arkansas Adopted ADA Accessible Guidelines in regard to accessible or handicapped features.
- G. Provide balanced construction for all high pressure laminated panels.

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## 1.4 WARRANTY

- A. Provide manufacturer's warranty against defects in materials, fabrication and installation, excluding damages caused by physical or chemical abuse or excessive heat. Warranty shall provide for replacement or repair of material and labor for a period of ten (10) years, beginning at Date of Substantial Completion.
- B. Maintain surfaces in accordance with manufacturer's care and maintenance instructions.
- C. Fabrications shall not have been moved from original place of installation.
- D. Warranty shall be transferable to subsequent owner.

## 1.5 SHOP DRAWINGS

- A. Submit accurately detailed shop drawings to Architect for approval prior to fabrication. Comply with Section 01 33 00 for submittal.
- B. Submit two copies of shop drawings and one reproducible set to Architect.
- C. Samples: Submit thermally fused laminate (melamine), and PVC edging, full color for Architect's selection.

## 1.6 COORDINATION & FIELD VERIFICATION

- A. Cabinet/millwork contractor to be responsible for coordination of installed equipment and fixtures specified in other sections and shown on drawings. Contractor to provide required specifications to cabinet/millwork contractor so he may make provisions for installation and attachment of equipment and fixtures, which are to be installed in cabinets. Contractor is responsible for field verifying accurate field measurements prior to fabrication and placement.

## 1.7 PRODUCT HANDLING & DELIVERY

- A. No delivery or installation shall be allowed until building is sufficiently dry; and climate controlled to receive such materials without risk or damage to same.

## PART 2 PRODUCTS

### 2.1 EXPOSED PRE-ASSEMBLED CABINETS: Where indicated on drawings.

- A. Ends and Exposed Partitions: 3/4" thick 47 lb. density particle board with .050 thick high pressure laminate. Selected TFL may be applied on ends and partitions not exposed to view. Ends are attached to top and bottom by AWI Premium dowelling or with special concealed 1/4" x 3-1/2" knife threaded hex headed screw connectors by Hafele or alternate.

- B. Exposed Edges: Ends, partitions, finished backs, tops, bottoms, sub-tops, shelves, drawer fronts and doors are protected with 3mm P.V.C. banding. Architect to select from manufacturer's entire PVC banding color range. The bottom edge of the base and tall cabinets finished ends must have 3mm flat PVC banding.
- C. Tops and Bottoms: Minimum 3/4" thick, 47 lb. density particle board with .050 thick high pressure laminate will be applied when called for on plans. Tops shall be prepped to receive sink clamps. Coordinate with plumbing contractor. Exposed bottoms of wall cabinets to have same material and color as door faces.
- D. Sub-tops: At all base cabinets top frame shall be minimum 3/4" thick solid particle board.
- E. Bases: 3/4" thick x 4" wide exterior Pine or Fir plywood applied separately to the bottom of base and tall storage cabinets. 4" coved Rubber base to be installed. Refer to Section 09 65 00 Resilient Flooring.
- F. Concealed Shelves: Shelves 1" thick, 47 lb. density particleboard thermally fused laminate (melamine).
  - 1. Architect to select colors from manufacturer's standard selection.
- G. Concealed Cabinet Interior Finish: unless called for otherwise, provide thermally fused laminate (melamine) color as selected.
- H. Backs:
  - 1. Exposed backs: will be same materials as ends.
  - 2. Unexposed backs: 1/2" thick 47 lb density particleboard with .028 thick high pressure laminate, balanced construction. Back to be fully captured on all four sides and attached with glue. Provide 1/2" nailer strip.
- I. Drawers: (Provide AWI premium grade construction as minimum requirement)
  - 1. Fronts: 3/4" 47 lb. density particleboard with .050 thick high pressure laminate, both sides.
  - 2. Drawer body: Sides, fronts and backs shall be 1/2" thermally fused laminate (melamine), laminate both sides (1/2" hardwood solid core plywood finger jointed or Dovetail jointed on all four corners, glued and cross pinned will be considered equal construction). (Dovetail joint will be considered equal construction). 1/2" plywood drawer bottoms shall be laminated with minimum .028 high pressure plastic laminate.
  - 3. Drawer bottom: Minimum 1/4" plywood or hardboard, grooved in on all four sides, or 1/2" 47 lb. density particle board with thermally fused laminate (melamine). Provide minimum 1/2" 47 lb. density particle board with thermally fused laminate (melamine) for drawers 30 inches or wider.
  - 4. Drawer slides:
    - a. Standard: Accuride #7432 or approved alternate, min. 75 pound capacity, ball bearing slide. All file drawer slides to be full extension.
    - b. Heavy duty full extension (equipment shelves and drawers over 24" deep and 8" in height): Accuride #3832 or approved alternate.
  - 5. Index followers: (file drawers) K.V. #476F.

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6. Hanging File Rails: Blum Metafile for letter size hanging files to be provided at file size drawers. Refer to drawings for standard or lateral file hanging orientation.
  7. Additional support to be provided for drawers 30" wide or more.
- J. Doors:
1. Standards: 3/4" 47 lb. density particleboard with .050 thick high pressure laminate both sides.
- K. Filler Panels: 3/4" thick 47 lb. density particleboard core with .050 thick high pressure laminate finish. Fillers to be used as required, in colors to match other vertical laminate surfaces. **No filler panels more than 3" wide are to be used unless shown otherwise.**
- L. Open Shelving Units: 1" thick 47 lb. density particleboard with .050 thick high pressure laminate. Exposed edges will be 3mm PVC or oak (refer to item No. "B" exposed edges). All shelves to be adjustable with holes at 32 mm on center.
- M. Shelf Supports:
1. Adjustable shelves: Provide holes @ 32 mm o.c. vertical, provide minimum 4 polymer twin pin-locking shelf clips per shelf capable of receiving 3/4" or 1" thick shelving. Clips to withstand 500 lb. Static load per shelf.
  2. Fixed shelves: Dowels and glue, AWI premium grade construction.
- N. Hardware:
1. Pulls: Stanley Hardware No. 4483-1/2, US26D finish, or equivalent pull.
  2. Concealed Hinges: Concealed type, 170° Clip Top, Model 71T6580 with 175H7100 Hinge Plate, Manufactured by Blum. No substitutions allowed. Hinges to be self-closing.
  3. Door Bumpers: Provide clear bumpers similar to 3M Bumpon at every door leaf as req., minimum 2 per leaf.
  4. Locks: (When called for) If required, locks can be keyed different and master keyed. Otherwise, key each group of locks together. Verify with owner prior to cabinet fabrication.
    - a. Drawers and single leaf doors: CompX National #C8053 series, cylinder type, 5 disk tumbler mechanism.
    - b. Double leaf locking:  
Lock - CompX National #C8053 series, cylinder type, 5 disk tumbler mechanism.  
Latch: CompX Timberline DL series double door latching system with the DL-200 and DL300 activator and catch. Provide black color. Provide 1 latch system (bottom) for doors up to 48" in height and two latch systems (top & bottom) for doors over 48" in height.
    - c. Provide Chain-type door stop installed on inside of cabinet where unit butts up against sidewall to prevent door from opening into wall or possible other device mounted on wall.
    - d. Health center drawers and doors are to have dual locks with 2 cylinder sets.
- O. Additional Material: Furnish all fillers, scribes, etc., as shown on the drawings and/or as part of the cabinets but which may not be shown.

P. Miscellaneous Hardware Items:

1. Cord Grommets: 2" diameter plastic grommets in countertops, Doug Mockett, Model SG-2, color as selected by Architect.
2. Countertop Support Brackets: Chevron countertop bracket by Federal Brace, #40219, 20" x 20", stainless steel.
3. Study Desk Support Brackets: Chevron Countertop bracket by Federal Brace, #40218,

## 2.2 LAMINATED PLASTICS

- A. Furnish laminated plastic as detailed in plans on countertops and cabinetry in strict accordance with manufacturer's recommendations. Joints shall not be located in random fashion and entire, one piece application shall be used wherever possible. Provide plastic edges where shown. Laminated plastic. Color, pattern and finish shall be as listed on drawings and verified by Architect.
- B. Provide solid color plastic laminate and chemical resistant laminate where called for on drawings.
- C. Thermally Fused Laminate Melamine Board: Furnish thermally fused laminate as detailed in plans on cabinetry in strict accordance with manufacturer's recommendations. Color, pattern and finish shall be as listed on drawings and verified by Architect.
1. When wood-grain designs of plastic laminate are selected, Direction of wood grain to be vertical on door, end panels, fascia panels, and exposed backs, horizontal on drawer faces, aprons, and top rails unless noted otherwise.

## 2.3 SEALANTS

- A. Sealant Applications
1. Plastic laminate to plastic laminate (i.e. counter top to backsplash)
    - a. "Color Matched Acrylic Latex (Match countertop color)
  2. Solid surface to solid surface (i.e. counter top to backsplash)
    - a. Color Matched Acrylic Latex (Match countertop color)
  2. Epoxy resin to epoxy resin-Black (i.e. counter top to backsplash)
    - a. 100% Silicone, Black
  3. Stainless steel to walls (i.e. counter top to wall at concession areas)
    - a. 100% Silicone, Clear
  4. Case work to walls
    - a. Acrylic Latex, clear, tinted with paint provided by the painters to create a color match sealant to match wall color.

## 2.4 CONSTRUCTION

- A. As a minimum requirement, conform to construction standards of AWI, premium grade and as specified this section.

- B. Millwork fabricator/supplier is responsible for proper construction of each item of millwork, including support of each unit and countertops. If fabricator/supplier finds conditions on millwork drawings that might affect proper operation or require additional support from that shown, notify Architect and provide recommendation so that proper operation or support is provided.
- C. ADA- Americans with Disabilities Act Requirements: The following special requirements shall be met, where specifically indicated on architectural plans as “ADA”, or by General Note. To be in compliance with Federal Register Volume 56, No. 144, Rules and Regulations:
1. Countertop height: with or without cabinet below, not exceed a height of 34 inches A.F.F., (Above Finished Floor), at a surface depth of 25 inches unless noted otherwise.
  2. Knee space clearance: to be minimum 27 inches A.F.F., and 30 inches clear span width.
  3. 12 inch deep shelving, adjustable or fixed: not to exceed a range from 9 inches A.F.F. to 54 inches A.F.F. unless noted otherwise.
  4. Wardrobe cabinets: to be furnished with rod/shelf adjustable to 48 inches A.F.F. at a maximum 21 inch shelf depth.
  5. Sink cabinet clearances: Upper knee space frontal depth to be no less than 8 inches, and lower toe frontal depth to be no less than 8 inches, and lower toe frontal depth to be no lower than 11 inches, at a point 9 inches A.F.F., and as further described in Volume 56. Section 4.19 unless noted otherwise.
    - a. Catches to have a maximum resistance of 5 pounds.
- D. Countertops
1. Underside to be properly balanced with backing sheet. Furnish counter tops with edge treatment and profile as shown on the shop drawings. Whenever possible, provide continuous lengths. Provide field joints as required using adhesive and tite-joint fasteners. No joints within 24” of a sink cut-out.
  2. Provide proper support for all types of countertops at no more than 3’-0” on center unless noted otherwise.
- E. Workmanship
1. Laminate surface/balancing liner to core under controlled conditions, by approved and regulated lamination. Natural-setting hybrid P.V.A. Type III water resistant adhesives that cure through chemical reaction, containing no health or environmentally hazardous ingredients, are required. Methods requiring heat are not allowed.
  2. Cabinet parts shall be accurately machined and bored for premium grade quality joinery construction utilizing automatic machinery to insure consistent sizing of modular components. End panels shall be doweled to receive bottom and top.
  3. Back panels shall be fully housed into, and recessed 7/8 inch from the back of cabinet sides, top, and bottom to insure rigidity and a fully closed cabinet. Cabinet back shall be shimmed from rear of body for tight interior fit.
  4. 3/4 inch thick hang rails shall be mechanically fastened to end panels of wall, base, and tall cabinets for extra rigidity and to facilitate installation.
  5. All cases shall be square, plumb, and true.

6. Provide removable back panels and closure panels for plumbing access where shown on drawings and required by code. Coordinate with plumbing, mechanical, and electrical trades.
7. Cutouts for plumbing piping in concealed rear, sides or bottom cabinet panels shall be no larger than 1/4" larger than the pipe diameter. Install sealant around all penetrations.

## PART 3 EXECUTION

### 3.1 COORDINATION

- A. Coordinate work of this section with related work of other sections and drawings as necessary to obtain proper installation of all items.
- B. Field verify site dimensions of cabinet locations in building prior to fabrication.
- C. Coordinate all plumbing/mechanical item locations and openings with plumbing/mechanical contractor where items are related to millwork prior to routing and installation of plumbing/mechanical items.
- D. Coordinate all owner furnished items, which are to be installed in or adjacent to millwork.
- E. Coordinate locations of wood grounds and blocking concealed in walls with cabinet anchoring requirements prior to installation of wall covering.

### 3.2 INSTALLATION

- A. Storage and Protection: Cabinets and millwork shall be protected in transit. Store under cover in a ventilated building not exposed to extreme temperature and humidity changes. Do not store or install cabinets in building until concrete, masonry, and drywall/plaster work and painting is dry and building temperature and humidity are stabilized. Exterior doors, windows and glass shall be installed prior to millwork storage and installation in building. If project calls for polished concrete floors, final polishing of floor shall be complete in areas where millwork is being installed.
- B. Workmen: Install under the supervision of manufacturer's or supplier's representative if manufactured casework is provided, factory-trained mechanics certified by manufacturer will be required.
- C. Workmanship:
  1. Erect cabinets and millwork straight, level and plumb and securely anchor in place. Scribe and closely fit adjacent work. Cut and fit work around pipes, ducts, etc.
  2. Install all items complete and adjust all moving parts to operate properly.
  3. Leave surface clean and free from defects at time of final acceptance.
- D. Maximum width of any filler to be 3" inches wide. Filler width dimension to be balanced on each side of cabinet length.

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- E. Coordinate equipment and plumbing fixture locations, scheduled to be installed in cabinets.
- F. Coordinate installation and anchoring of solid surface tops back splash aprons, and trim.
- G. Install sealant between countertop and backsplash, and between backsplash and wall, and other locations where cabinet butts to walls or ceilings.
- H. Install grommets in countertops where shown on drawings and for each computer station or keyboard tray where computer stations are shown on drawings. Coordinate and provide access to electrical receptacles below tops and in panels below countertops.
- I. Anchors for cabinets to be countersunk and plugged with vinyl inserts to match back panel colors. STICKERS ARE **NOT** ALLOWED. Arrange anchors in uniform manner, anchoring to wood ground and/or masonry wall.

### 3.3 CABINET FINISH

- A. Provide finishes as selected on Finish Legend on drawings.
- B. For other than thermally fused melamine laminate or high pressure laminate cabinet work, surfaces shall be thoroughly sanded and prepared before finish is applied. No misfits, hammer marks, splinters, bruises, etc., set forth all nail holes. Cabinets to be stained inside and out shall be called out on plans. See section 09 91 00.

### 3.4 CLEANUP

- A. Remove all cartons, debris, sawdust, scrapes, etc. Leave cabinet surfaces and spaces clean, ready for owner's use.

END OF SECTION

06 41 16-8

## SECTION 06 61 16

### SOLID SURFACING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes: Fabrication and installation of solid surfacing components including accessories indicated, specified, and required for installation.

##### 1.2 RELATED SECTIONS

- A. Section 06 10 00 - Rough-in Carpentry – Blocking
- B. Section 06 41 16 – Cabinet Work and Shelving

##### 1.3. QUALITY ASSURANCE

- A. Fabricator Qualifications:
  - 1. Experienced with successful fabrication of specified work similar to scope of this Project.
  - 2. Record of successful in-service performance.
  - 3. Sufficient production capability, facilities, and personnel to produce required work.
- B. Installer Qualifications:
  - 1. Experienced in installation of specified work similar to scope of this Project.
  - 2. Record of successful in-service performance.
  - 3. Sufficient installation capability, facilities, and personnel to produce required work.

##### 1.4 SHOP DRAWINGS

- A. Product Data: Manufacturer's technical literature for each product indicated, specified, or required. Include manufacturer's written fabrication and installation instructions.
- B. Shop Drawings: Dimensioned and detailed plans, elevations, and large-scale details.
  - 1. Show locations of each component.
  - 2. Show materials, finishes, edge and splash profiles, and methods of joining.
  - 3. Show locations and sizes of cutouts and holes for plumbing fixtures, accessories and other items installed in countertops.
  - 4. Show attachment devices and other components to be incorporated into work.
- C. Samples for Verification: 4-inch square sample of selected material, in specified gloss, cut into 2 pieces and then joined together to represent an inconspicuous seam; indicate full range of color and pattern.

06 61 16-1

D. Maintenance Data:

1. For inclusion in maintenance manual close-out documents
2. Include manufacturer's instructions for maintenance of installed work, including methods and frequency recommended for maintaining optimum condition under anticipated use.
3. Include precautions against cleaning products and methods which may be detrimental to finishes and performance.

1.5 COORDINATION & FIELD VERIFICATION

A. Field Measurements:

1. Where components are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings.
2. Locate concealed framing, blocking, and reinforcements that support components by field measurements before being enclosed, and indicate measurements on Shop Drawings.

1.6 PRODUCT HANDLING & DELIVERY

- A. Delivery: Do not deliver components until painting and similar activities have been completed in installation areas.
- B. Storage: Prior to installation, store in areas in which material will be installed.
- C. Handling: Handle components to prevent damage to finished surfaces.

1.7 WARRANTY

- A. Manufacturer's Warranty: Provide manufacturer's warranty against defects in materials. Warranty shall provide material and labor to repair or replace defective materials.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Specification and color selection are based on Wilsonart Solid Surface, 2501 Wilsonart Drive, P.O. Box 6110, Temple, TX 76503. Ph: (800) 433-3222. Alternates will be reviewed by Architect for compliance with the selected product as specified.

## 2.2 SOLID SURFACING MATERIAL

### A. Sheet Material:

1. Description: Continuously cast, non-porous, homogeneous solid sheets composed of acrylic polymer, aluminum trihydrate filler, and pigments that yield through-body color; not coated, laminated or of composite construction.
2. Basis of Design Selection:
  - a. Manufacturer: Wilsonart
  - b. Color Name: To be selected
  - c. Finish: Satin or semi-gloss
  - d. Thickness: ½" min..
  - e. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

## 2.3 ACCESSORIES

- A. Joint Adhesives: Adhesive capable of creating inconspicuous, non-porous seams; acceptable to material manufacturer.
- B. Fasteners and Mounting Hardware: Device type and size required sufficient to correctly attach or anchor specified item to substrate indicated without failure.

## 2.4 FABRICATION

### A. Shop Assembly:

1. Fabricate shapes in sizes and profiles indicated according to approved shop drawings and manufacturer's instructions.
2. Where necessary for fitting at Project, provide ample allowance for scribing, trimming, and fitting.

### B. Seams:

1. Form inconspicuous joints between components.
2. Reinforce on concealed side with strip of solid surfacing material not less than 1 inch on either side of joint by same thickness as components being joined.
3. Locate more than 3 inches from cutouts.

### B. Cutouts:

1. Use router to make openings according to templates and finish with clean and smooth edges.
2. Provide not less than 1/8 inch clearance between cutout edges and appliance or plumbing fixture.
3. Remove nicks and scratches.

06 61 16-3



- C. Overhangs: Support overhangs that are more than 6 inches.
- D. Thermoforming:
  - 1. Heat component and maintain between 275 and 325 degrees Fahrenheit during forming.
  - 2. Form pieces to shape prior to seaming and joining.
  - 3. Cut pieces to finished dimensions.
  - 4. Sand edges and remove nicks and scratches.
- E. Inlays:
  - 1. Rout groove approximately 1/8 inch deep according to design.
  - 2. Fill groove using methods approved by manufacturer, avoiding air bubbles or voids.
  - 3. Overfill inlay area.
  - 4. Allow inlay to cure.
  - 5. Do not allow inlay to overheat during sanding.
  - 6. Finish and touch-up to uniform appearance.
- F. Countertop Configuration:
  - 1. General Provisions:
    - a. Fabricate with loose backsplashes for field assembly.
    - b. Accurately cut holes and drill countertop panels to receive plumbing, fixtures, soap dispensers and other accessories.
  - 2. Countertop and Splashes Thickness: Not less than 1/2 inch.
  - 3. Front Edge: Slightly eased 1 inch laminated bullnose.
  - 4. Splashes: 4" high, Straight, slightly eased at corner and top.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Acceptance of Surfaces and Conditions:
  - 1. Examine substrates to which solid surfacing components will be applied for compliance with requirements and other conditions affecting performance.
  - 2. Proceed only when unsatisfactory conditions have been corrected in a manner complying with Contract Documents.
  - 3. Starting work within a particular area will be construed as acceptance of surface conditions.

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### 3.2 INSTALLATION

#### A. General:

1. Install components plumb, level, and scribed to adjacent substrates.
2. Leave space, not less than 1/8 inch for every 10 foot of length, between components and adjacent substrates.

#### B. Anchorage:

1. Fasten countertops by screwing through corner blocks of base units into underside of countertop. Pre-drill holes for screws as recommended by manufacturer.
2. Secure backsplashes to tops and walls with adhesive.

#### C. Seams:

1. Clean surfaces to be seamed to remove oil, dirt, and dust.
2. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's instructions.
3. Clamp until fully cured.
4. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
5. Buff and sand to produce a smooth uniform seamless surface.

#### D. Tolerance: Install countertops level, accurately aligned, without sag, bow, or variation from a straight line to a tolerance of 1/8 inches in 8 feet.

### 3.3 CLEANUP

#### A. Surface Finish:

1. Remove stains according to manufacturer's instructions.
2. Sand and polish to remove nicks, scratches, and other imperfections.

### 3.4 PROTECTION

#### A. Coverings: Cover installed components to prevent physical damage or staining until substantial completion.

END OF SECTION

06 61 16-5

## SECTION 07 10 00

### WATERPROOFING AND DAMPPROOFING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Furnish labor and materials to complete waterproofing and dampproofing shown and specified.
- B. Section Includes:
  - 1. Below-slab vapor barrier

##### 1.2 RELATED SECTIONS

- A. Section 03 30 00 – Cast-In-Place Concrete

##### 1.3 SUBMITTALS

- A. Comply with Section 01 33 00.

##### 1.4 WARRANTY

- A. The Contractor must guarantee all materials and workmanship for a minimum period of two (2) years from the date of Substantial Completion of the building unless longer warranty periods are specified for individual specified products.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS:

- A. Underslab Moisture Barrier: 15 mil thick virgin polyethylene, Approved Products and Manufacturers:
  - Yellow Guard 15 mil vapor barrier, Manufactured by Husky
  - “Perminator” under-slab vapor mat manufactured by W.R. Meadows, 15 mil thick
  - “Stego Wrap Class A”, manufactured by Stego Industries, Inc., 15 mil thick
  - “EXTREME” manufactured by Extrude, Class A”,
  - W.R. Meadows (Perminator), Vaporblock
  - VB15, manufactured by Raven Industries,
  - Viper “Vaporcheck II” 15 mil class A vapor barrier, manufactured by Insulation Solutions, Inc., or approved alternate.
- 1. Use High Density Polyethylene Tape with pressure sensitive adhesive. Minimum width 4 inches. Sealing tape shall be coated with a high tack natural rubber adhesive.

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2. Waterproofing adhesive or mastic equal to Stego Mastic shall be a high quality, long lasting, asphalt-based material and shall be applied in accordance with its manufacturer's specification. Waterproofing adhesive shall be compatible for use with the vapor barrier and shall meet the applicable standards for the intended use. The installation contractor shall submit the product specification for Architect's review and approval prior to using the product.
3. References
  - a. ASTM E 1745-09 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.
  - b. ASTM E 154-99 (2005) Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
  - c. ASTM E 96-05 Standard Test Methods for Water Vapor Transmission of Materials.
  - d. ASTM F 1249-06 Standard Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor.
  - e. ASTM E 1643-09 Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
4. American Concrete Institute (ACI):
  - a. ACI 302.2R-06 Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.
5. Vapor barrier must have all of the following qualities:
  - a. Permeance of less than 0.01 Perms [ $\text{grains}/(\text{ft}^2 \cdot \text{hr} \cdot \text{inHg})$ ] as tested in accordance with ASTM E 1745 Section 7.
  - b. Other performance criteria:
    - i. Strength: ASTM E 1745 Class A.
    - ii. Thickness: 15 mils minimum
6. Quality control/assurance (Submit the following for Architect's approval):
  - a. Summary of test results as per paragraph 8.3 of ASTM E 1745.
  - b. Manufacturer's samples, literature.
  - c. Manufacturer's installation instructions for placement, seaming and penetration repair instructions.

## PART 3 EXECUTION

### 3.1 WORKMANSHIP:

- A. Below-Slab Vapor Barrier (15 mil below-slab):
  1. Prepare surfaces in accordance with manufacturers instructions.
  2. Installation shall be in accordance with manufacturer's instructions and ASTM E 1643. All lap joints and areas to be sealed shall be free from dirt, dust, and moisture. Sealing tape shall be applied in temperatures ranging from 41°F to 122 °F or according to its manufacturer specification. Where inconsistencies occur between the project plans and specification and ASTM E1643, the project plans and specification shall govern.
  3. Unroll vapor barrier with the longest dimension parallel with the direction of the pour.
  4. Lap vapor barrier over footings and seal to foundation walls or top of footings with manufacturer approved sealant.
  5. Overlap joints 6 inches and seal with manufacturer's tape.
  6. Seal all penetrations (including pipes) with manufacturer's pipe boot and sealant.

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7. No penetration of the vapor barrier is allowed except for reinforcing steel and permanent utilities.
8. Repair damaged areas by cutting patches of vapor barrier, overlapping damaged area 6 inches and taping all four sides with tape.
9. Pipe/Conduit Boots and Penetration Sealing:
  - a) Cut a piece of vapor barrier. Width: minimum 12 inches Length: one and one-half times the pipe circumference
  - b) With scissors, cut slits half the width of the vapor barrier.
  - c) Wrap boot around pipe and tape onto pipe, completely taping the base to vapor barrier using the polyethylene tape.
  - d) Install mastic around and through groups of conduits, grade stakes or piping, which cannot be sealed by taping. Seal to vapor barrier. As an allowable alternate method of penetration sealing in lieu of taping, mastic may be used to seal around single penetrations such as pipe, conduit, floor drains, etc. Confirm that the material mastic is installed at is compatible with the mastic prior to application.
10. Seal vapor barrier to top of footings with mastic where vapor barrier terminates at perimeter or interior footings. When vapor barrier terminates at concrete or CMU walls, seal with mastic. Do not apply mastic above top of finished slab elevation.

END OF SECTION

07 10 00-3

## SECTION 07 21 00

### INSULATION

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Furnish all labor, material, equipment, and services necessary for and reasonably incidental to complete insulation as called for below.

##### 1.2 SUBMITTALS

- A. Comply with requirements of Section 01 33 00.

##### 1.3 QUALITY CONTROL

- A. All packages and containers of foam plastic and foam plastic ingredients shall bear the label of an approved agency showing either the flame spread rating and smoke developed rating of the product at the thickness tested or the use for which the product has been listed.
- B. All foam plastics or foam plastic cores in manufactured assemblies used in building construction shall have a flame spread rating of not more than 75 and shall have a smoke developed rating of not more than 450 when tested in the maximum thickness intended for use in accordance with ASTM E84.
- C. The potential heat of foam plastic in any portion of the wall or panel shall not exceed 6000 BTU/sq.ft. of projected area as described by tests conducted in accordance with NFPA 259.
- D. Foam plastic insulation, exterior coatings and facings tested separately shall have a flame spread rating of 25 or less and a smoke developed rating of 450 or less as determined in accordance with ASTM E 84.
- E. Results of diversified or full scale fire tests reflecting an end use configuration shall be submitted to the Building Official demonstrating the assembly in its final form does not propagate flame over the surface or through the core when exposed on the exterior face to a fire source.
- F. The edge or face of each piece of foam plastic insulation shall bear the label of an approved agency. The label shall contain the manufacturer's or distributor's identification, model number, serial number of definitive information describing the product or materials performance characteristics and approved agency's identification.
- G. Insulating materials, concealed as installed shall have a flame spread rating of not more than 25 and a smoke developed rating of not more than 450. Insulating materials exposed as installed shall have a flame spread rating of not more than 25 and a smoke developed rating of not more than 450.

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## PART 2 PRODUCTS

### 2.1 MATERIALS:

- A. Fiberglass batt type as manufactured by Owens Corning, Certaineed, Johns Manville or approved equal of thickness or R-value as shown on drawings, un-faced, meeting smoke and flame spread rating as specified this section. All concealed and exposed insulation to meet minimum flame spread and smoke development ratings per this specification and governing code requirements.
- B. Sound Attenuation Batts: 3 1/2" thick, un-faced fiberglass "Sonobatts", manufactured by Owens Corning, or approved alternate.
  - 1. Provide sound attenuation batts in stud walls surrounding each toilet and walls surrounding classrooms, breakrooms, offices and conference rooms.
  - 2. Refer to drawings and finish schedule notes for other areas where sound attenuation batts are called for.

### 2.2 ACCESSORIES:

- A. Unfaced Batt Insulation Fasteners: Approved Manufacturer- Midwest Fasteners, Inc., 450 Richard St., Miamisburg, OH 45342 PH: (800) 852-8352 Fax: (937) 866-4174  
Email: [sales@midwestfasteners.com](mailto:sales@midwestfasteners.com)
  - 1. Adhesively attached spindle-type anchors with washers for batt insulation. Plate formed from perforated galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square, welded to projecting steel spindle with a diameter of 0.105 inch and length capable of holding insulation of thickness indicated securely in position with 1-1/2 inch square or diameter self-locking washers complying with the following:
    - 1. Washers formed from 0.016 inch thick galvanized steel sheet, with beveled edge for increased stiffness, sized as required to hold insulation securely in place.
    - 2. Where anchors are located in ceiling plenums provide capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap.
    - 3. Provide spindle length as required for insulation thickness.
- B. Anchor Adhesive: Approved Manufacturer/Product: IHA-177 fastener adhesive, Midwest Fasteners, Inc. 450 Richard St., Miamisburg, OH 45342 PH: (800) 852-8352 Fax: (937) 866-4174  
Email: [sales@midwestfasteners.com](mailto:sales@midwestfasteners.com)
  - 1. Product with demonstrated capability to bond insulation anchors securely to substrates indicated without damaging insulation, fasteners, and substrates.

## PART 3 EXECUTION

### 3.1 WORKMANSHIP

- A. Batt Insulation between metal studs  
Friction-fit insulation between studs after cover material has been installed

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on one side of the cavity. When unfaced insulation is used, and in applications without a cover material or where the stud depth is larger than the insulation thickness, use Spindle-type anchors and washers as specified and adhered to inside face of sheathing or substrate at 1'-0" o.c.-staggered. When faced insulation is used, the attachment flanges may be taped to the face of metal stud prior to applying the interior finish.

1. Provide supplementary support to hold the product in place until finish surface is applied when insulation is installed in heights over 8 feet.
2. Coordinate to assure electrical conduits and water piping are held to the interior face side of the wall.
3. Unless other types of insulation is called for, install minimum 6" thick batt insulation (additional thickness as called for on drawings) above ceilings where attic space exists, and at roof where no attic space exists. Provide complete thermal seal between exterior and conditioned space.
4. Unless noted otherwise and in addition to locations called for on drawings and in specifications, batt insulation shall be installed in exterior wall studs and interior walls separating conditioned space from non-conditioned spaces (i.e. offices from warehouse). Provide the following minimum R values:
  - a. R-19 at nominal 6" stud walls.
  - b. R-11 at nominal 3-5/8" stud walls.

B. Fiberglass wall insulation and sound attenuation batts shall be friction fit, with electrical conduits and water piping held to the interior face side of the wall. When unfaced insulation is used, and in applications without a cover material or where the stud depth is larger than the insulation thickness, use wire or metal straps to hold insulation in place, maximum spacing 2'-0" o.c.

1. Install tight to sides of studs.

C. Rigid Cavity Wall Insulation

1. Install tight to substrate. Panels are secured in place with wall tie system. Refer to Sections 04 21 13 and/or 04 22 00 for masonry wall tie product information.
2. Joints to be butted tight to each other at ends and sides.

END OF SECTION

07 21 00-3



## SECTION 07 92 00

### JOINT SEALANTS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Preparing sealant substrate surfaces.
  - 2. Sealant and backings

##### 1.2 RELATED SECTIONS

- A. Section 06 41 16: Cabinetwork & Shelving
- B. Section 08 11 13: Hollow Metal Doors & Frames
- C. Section 08 81 00: Glass & Glazing
- D. Section 09 29 00: Drywall

##### 1.3 SUBMITTALS

- A. Comply with requirements of Section 01 33 00.

##### 1.4 REFERENCES

- A. American Society for Testing and Materials (ASTM):
  - 1. ASTM D1056 - Flexible Cellular Materials - Sponge or Expanded Rubber.
  - 2. ASTM C1087 - Sealant Compatibility with Glazing Materials and Accessories.
  - 3. ASTM D1565 - Flexible Cellular Materials - Vinyl Chloride Polymers and Copolymers (Open Cell Foam).
  - 4. ASTM C920 - Elastomeric Joint Sealants.
- B. Sealing and Waterproofer Institute(SWI):
  - 1. SWI - Sealant and Caulking Guide Specifications.

##### 1.5 ENVIRONMENTAL REQUIREMENTS

- A. Do not install solvent curing sealants in enclosed building spaces.
- B. Maintain temperature and humidity recommended by sealant manufacturer during and after installation.

##### 1.6 SEQUENCING AND SCHEDULING

- A. Coordinate work of this Section with all Sections referencing this Section.

07 92 00-1

## PART 2 PRODUCTS

### 2.1 SEALANT MATERIALS

- A. Polymer or Polyurethane Sealants:
  - 1. **Polyurethane Sealant #1:** ASTM C920, Type M, Grade NS, Class 25.
  - 2. ASTM C719, ASTM D412, ASTM C661, ASTM C679 and ASTM C510
  - 3. Polyurethane Sealant approved manufacturers:
    - a. MasterSeal NP-150 by BASF.
- B. Silicone Sealant:
  - 1. **Silicone Sealant #1:** ASTM C920, Type S, Grade NS, Class 25, mildew resistant.
    - a. Sanitary 1702 by General Electric Silicone Products Division.
    - b. 786 by Dow Corning Corporation.
  - 2. Acceptable Alternate Silicone Sealant Manufacturers: GE Sealants

### 2.2 ACCESSORIES

- A. Primer: Non-staining, clear type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Filler: Polyethylene foam rod, oversized 30% to 50%
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.
- E. Backer Seal: "Greyflex" backer seal, manufactured by Emseal Joint Systems, LTD (800) 526-8365. No substitutions will be accepted.

### 2.3 SEALANT COLORS

- A. Colors to be selected from manufacturer's standard color selection for each type of sealant specified. Architect to approve color matches.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that surfaces and joint openings are ready to receive work and field measurements are as shown on Drawings and recommended by the manufacturer.
- B. Beginning of installation means installer accepts existing substrates

### 3.2 PREPARATION

- A. Clean and prime joints in accordance with manufacturer's instructions.
- B. Remove loose materials and foreign matter which might impair adhesion of sealant.
- C. Verify that joint backing and release tapes are compatible with sealant.
- D. Protect elements surrounding work of this Section from damage or disfiguration.

### 3.3 INSTALLATION

- A. Install sealant in accordance with manufacturer's instructions.
- B. Measure joint dimensions and size materials to achieve required width/depth ratios.
- C. Install joint backing rods to achieve neck dimension no greater than 1/3 the joint width. For joints 1/2" to 7/8", install backer seal prior to installing backer rod material install backer seal and backer rods as required to keep a uniform depth along entire joint.
- D. Install bond breaker where joint backing is not used.
- E. Apply sealant within recommended temperature ranges. Consult manufacturer when sealant cannot be applied within recommended temperature ranges. In no case, allow the depth of sealant be less than 1/2".
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Tool joints concave.
- I. Interior sealants are not to be installed until building is tempered by HVAC system and temperature will remain constant. **DO NOT PAINT POLYURETHANE AND SILICONE SEALANTS.** Do not install sealants in walls or floors where paint, stain, etc is scheduled to be applied until after finishes are applied unless sealants are masked off during coating process.

### 3.4 SCHEDULE

- A. General Interior Construction:
  - 1. Polyurethane Sealant #1
- E. Plumbing Fixtures:
  - 1. Silicone Sealant #1.

END OF SECTION

07 92 00-3

## SECTION 08 11 13

### HOLLOW METAL FRAMES

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Furnish labor and materials to complete Hollow metal frames, and related items as shown and specified.

##### 1.2 RELATED SECTIONS

- A. Section 08 14 16 - Wood Doors.
- B. Section 08 71 00 – Finish Hardware
- C. Section 09 29 00 – Drywall
- D. Division 26 - Electrical Requirements.

##### 1.3 SUBMITTALS

- A. Comply with requirements of Section 01 33 00.
- B. Shop Drawings: Submit prior to fabrication for approval of Architect detailed shop drawings, showing all frames, other miscellaneous materials. Shop drawings to show all locations of reinforcement for door hardware in frames.

##### 1.4 REFERENCES

- A. Comply with ADA Accessible Guidelines in regard to accessible or handicapped features.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Hollow Metal Frames -
  - 1. Manufactured by Steelcraft, Ceko, Curries or Amweld, or approved alternate, constructed of cold rolled steel, commercial quality, annealed and temper passed. All frames, interior, exterior: 16 gauge all openings 3'-6" or less, and 14 gauge for all openings over 3'-6".
  - 2. Exterior Frames: **Fleming** or approved alternate, special galvanized, paintable. Field paint all frames.
  - 3. Frames:
    - a. All frames shall be a one piece unit type with head and jambs completely mitered and face joints continuously welded in their entirety and ground smooth. Inside corners to be caulked prior to painting. The use of tenons or bent tabs is not acceptable. Where

08 11 13-1

transoms and sidelights are required, frames: shop assembled for a proper fit, then shipped in largest size units permitted by shipping restriction. Mullions: assembled by sliding two sections together with continuous welded interior guides. Screwed on mullion covers and visible seams, not acceptable. All seams ground smooth. All exposed welding tabs ground smooth.

- b. No KD type frames shall be permitted.
  - 4. Provide concealed reinforcements, drilled and tapped, to receive hardware. Hinge reinforcements: 10 gauge with top hinge high frequency usage hinge reinforcement, 10 gauge angle stiffener welded to both sides of the frame and hinge reinforcement. Lock reinforcement: spring type stabilizer to hold lock in place. Lock and surface applied hardware reinforcement 10 gauge. Clip angles: spot welded to bottom of each frame for anchoring to floor. Mortar 14 gauge anchors, one per each 2' of height, per jamb of a type to suit conditions and requirements. All other reinforcement for hardware to be minimum 10 gauge.
  - 5. Frames where Underwriter Labeled doors are used: carry Underwriter Label frame.
  - 6. Provide three (3) rubber silencers on strike side of all frames.
  - 7. All exposed screws to be countersunk using flathead screws, flush with surface.
- B. Frames shall be prepared to receive hardware as specified in section 08 71 00 and glass of type, size, and shape as shown on drawings. Use reinforcing plates welded to inner face of frames for all hardware.
- C. Coordinate frame throat sizes with wall thicknesses where frames are installed in stud and drywall partitions.
- E. Provide three (3) rubber door silencers for each single leaf door frame, and two (2) door silencers for each double leaf door frame.

## PART 3 EXECUTION

### 3.1 COORDINATION

- A. Coordinate location and installation of reinforcement for all scheduled door hardware items attached to hollow metal frames.

### 3.2 FRAME ANCHORING

- A. Provide proper anchors for wall type frames are to be installed in.

### 3.3 FINISHES

- A. All surfaces to be job finished shall be thoroughly cleaned, removing all rust, scales, grease, etc.

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### 3.4 STORAGE AND ERECTION

- A. Carefully store frames in an upright position, not on ground, protected from moisture and weather. Frames that are dented or sprung, before, during, or after installation will not be accepted.

END OF SECTION

08 11 13-3

## SECTION 08 14 16

### WOOD DOORS

#### PART 1 GENERAL

##### 1.1 SCOPE:

- A. Furnish and install wood doors as shown and as specified herein. Doors are to be of type, size, and design shown and scheduled on drawings.

##### 1.2 RELATED WORK:

- A. Section 08 71 00 – Hardware
- B. Section 08 81 00 - Glass & Glazing
- C. Section 09 91 00 - Finishes

##### 1.3 QUALITY REQUIREMENT:

- A. All wood doors shall meet N.W.W.D.A. Industry Standard 1-A and Architectural Woodwork Institute Section 1300-G-3, Type FPC-7.

##### 1.4 SUBMITTALS

- A. Comply with requirements of Section 01 33 00.
- B. Submit shop drawings in accordance with General Requirements. Include full size molding section detail for light and louver installation. Show glazing material, louver type and thickness, and face veneer grade and species.

##### 1.5 REFERENCES

- A. Comply with State of Arkansas Adopted ADA Accessible Guidelines in regard to accessible or handicapped features.

##### 1.6 DELIVERY

- A. Package in heavy Kraft paper or polyethylene bags. Deliver and store in areas of Temperature and humidity such as will not adversely affect doors.
- B. Doors shall be packaged in individual cartons.

##### 1.7 PROTECTION

- A. Protect work from damage until final acceptance.

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## 1.8 WARRANTY

- A. Manufacturer to provide lifetime warranty for interior duration, and two (2) year warranty for exterior duration.
- B. Door warp tolerance shall not exceed 1/4" in any section of the door.
- C. Stile, rail and core "telegraphing" shall not exceed 1/100" in any 3" span.

## PART 2 PRODUCTS

### 2.1 ACCEPTABLE MANUFACTURERS

- A. Masonite
- B. Oshkosh Architectural Door Company.
- C. VT Industries

### 2.2 MATERIALS

- A. Doors shall be 1 3/4" thick, 5 or 7 ply, solid core, stain grade, rotary cut white birch-uniform. (Field verify existing door species and match). Paint grade may be used where called for on finish schedule. Top and bottom rails to be 1 1/8" min. width, stiles 1 3/8" min. Width prior to field fitting. Core shall be wood particle core meeting ANSI A208.1, Grade 1-LD-1, or 1-LD-2 with a 28-32 lb density, and type II adhesive. Veneer shall be provided on side edges and shall match species of face veneer. Where a pair of doors are called for, face veneer shall be book-matched grain. Provide mineral composition core when fire rating is required.
- B. Provide factory-prefinished doors from the manufacturer. Stain color is to match existing wood doors. Architect is to approve.

### 2.3 FABRICATION

- A. Fabricate premium type doors in accordance with requirements of WDMA Quality Standards (SCLC-5 or 7) unless specifically indicated otherwise.
- B. Fabricate fire rated doors in accordance with requirements of Underwriter's Laboratories (UL).
- C. Provide doors with edge strips, of wood species to match face veneers.
- D. Make cutouts and provide stops for glass.
- E. Pairs of doors shall be products of a manufacturer who can furnish such doors without astragals and meet the UL requirements.

08 14 16-2



- F. Pre-fit doors at factory with 1/8 inch tolerance on each vertical face, 1/8 inch tolerance at top, and 1/2 inch at bottom, except where undercuts are scheduled.
- G. Machine doors for hardware as required by Hardware Schedule listed in Section 08 71 00, which will be supplied together with all necessary templates for hardware requiring door preparation.
- H. Steel frame shop drawings will be furnished showing location and size of hardware preparation.
- I. Bevel strike edge of single acting doors 1/8 inch in 2 inches. Radius strike edge of double acting swing doors, 2-1/8 inches.
- J. All fire rated doors shall be factory prepped to receive hardware and glazing.
- K. Pre-finish doors at factory with clear WDMA System #6 finish.

### PART 3 EXECUTION

#### 3.1 INSTALLATION AND WORKMANSHIP:

- A. Install doors plumb and true to operate without bind or drag with 1/8" clearance top and sides. Provide 3/4" undercut at bottom unless indicated otherwise.
- B. Doors damaged before or after hanging will be replaced.
- C. All edge and end surfaces will be sealed with two (2) coats of door manufacturer's standard sealer before final hanging. **This includes top and bottom ends.**
- D. All necessary refitting or adjustment shall be the Contractor's responsibility during the guarantee period.
- E. Provide moldings and glass stops of same species as face veneers.
- F. If called for, wood louvers to be factory installed into properly prepared openings.
- G. Pre-machine bevel on vertical edges of single doors or meeting stiles of pairs of doors.
- H. Coordinate door light location with door hardware to assure no conflicts occur.
- I. For door leaf 3'-6" to 4'-0" or wider, provide preparation for 2 pairs butt hinges or continuous hinge as specified.

#### 3.2 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver: Protect doors at all times. Deliver doors to site after plaster and cement are dry And building has reached average prevailing relative humidity of locality.

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- B. Storage: Stack flat on 2 x 4 lumber, laid 12” from ends and across center. Under bottom door and over top of stack provide plywood or corrugated cardboard to protect door surface. Store doors in area where there will be no great variation in heat, dryness and humidity.
- C. Handling: Do not drag doors across one another.

### 3.3 INSPECTION

- A. Verify that door frames are of type required for door and are installed as required for proper installation of doors. Do not install doors in frames which would hinder the operation of the doors.

#### SPECIAL NOTE:

THERE CAN BE NO GLASS OR GLASS KITS IN DOORS THAT WILL INTERFERE WITH THE MOUNTING OF ANY FINISH HARDWARE. ENOUGH STILE AND RAIL MUST EXIST SO THAT NO SHIMS ARE NEEDED.

END OF SECTION

08 14 16-4

## SECTION 08 31 13

### WALL ACCESS PANELS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Provide all labor, materials and equipment necessary for the furnishing and installation of access panels as required in gypsum board walls and in masonry walls for mechanical or electrical equipment access. Provide proper model for panels installed in materials other than gypsum board.

##### 1.2 SUBMITTALS

- A. Comply with Section 01 33 00.

#### PART 2 PRODUCTS

##### 2.1 MANUFACTURER/MODEL

- A. Nystrom Model NT (Stud and gypsum board).
- B. Substitutions: Subject to compliance with requirements, one of the following may be substituted for that specified.
  - 1. Karp
  - 2. J.L. Industries
  - 3. Approved alternate.
- C. Provide fire rated models of type required where installed in fire rated walls, or where called for on drawings.
- D. Panel size as needed for application, unless called out on drawings. Panel size and locations are to be approved by Architect prior to installation.

##### 2.2 CONSTRUCTION

- A. Galvanized bonderized 16 ga. steel door and 16 ga. frame.
- B. Continuous piano hinge.
- C. Key operated cylinder lock by access panel manufacturer, unless otherwise noted.
- D. Panel finish: White powder coat

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## PART 3 EXECUTION

### 3.1 PREPARATION

- A. Verify that rough openings are correctly installed to receive panels.
- B. Make necessary preparation of surrounding materials to accept panel installation.
- C. Coordinate locations and sizes of required access panels with Architect for approval.

### 3.2 INSTALLATION

- A. Install panels in accordance with manufacturer's instructions and provide concealed framing as required to properly install access panels.
- B. Adjust panel operation and locking mechanism to ensure all features of access panel operate smoothly.

END OF SECTION

08 31 13-2

## SECTION 08 34 53

### SECURITY DOOR AND FRAME

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

- A. Bullet resistant steel door and frame assembly.

##### 1.2 RELATED SECTIONS

- A. Section 08 71 00: Finish Door Hardware
- B. Section 09 22 16: Non-Structural Metal Framing

##### 1.3 REFERENCES

- A. Underwriters Laboratory UL 752-Standard for Bullet Resisting Equipment.
- B. ASTM A 666-Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate and Flat Bar.

##### 1.4 ACTION SUBMITTALS

- A. Refer to Section 01 33 00 Submittal Procedures
- B. Product Data: For each type of framing including manufacturer recommended installation instructions.
- C. Shop Drawings: Include plans, elevations, sections, details, attachment to other work.
- D. Samples: For each exposed finish.

##### 1.5 INFORMATION SUBMITTALS

- A. Product Test Reports: Indicating compliance with requirements
- B. Warranty: Sample of finish warranty

##### 1.6 CLOSEOUT SUBMITTALS

- A. Refer to Section 01 77 00 Closeout Submittals
- B. Maintenance data.

## 1.7 DELIVERY, STORAGE AND HANDLING

- A. Refer to Section 01 60 00 Product Requirements
- B. Deliver materials to the project site with the manufacturer's UL Listed Labels intact and legible. Handle the materials with care to prevent damage. Store materials inside and under cover, stack flat and off floor. Project conditions (temperature, humidity, and ventilation) shall be within the maximum limit recommendations provided by manufacturer. Do not install products stored in conditions outside manufacturer's recommended limits.

## 1.8 WARRANTY

- A. Workmanship Warranty: All materials shall be warranted against defects for a period of [1] year for the date of receipt at the project site. Provide certificates of manufacturer's standard limited warranty with closeout documents.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURED UNITS

- A. Basis of Design:
  - 1. Subject to compliance with requirements, provide products by the following:
    - a. Total Security Solutions, Inc., 935 Garden Lane, Fowlerville, MI 48836, 866 734-6277. Attn: Sales Department, sales@tssbulletproof.com. Web: www.tssbulletproof.com.
  - 2. Substitutions: Comply with Section 01 25 00 Substitution Procedures
- B. Design Performance:
  - 1. Through the design, manufacturing techniques and material application the TSS Bullet Resistant Steel Door and Frame Assembly shall be of the non-ricochet type. This design is intended to permit the retention of an attacking projectile lessening the potential of a random injury or lateral penetration.
  - 2. All joints and connections shall be tight, providing hairline points and true alignment of adjacent members.
  - 3. Door assembly swing: Refer to drawings
- C. Door and Frame Assembly Dimensions: As indicated on the Drawings.

D. Door and Frame Performance:

1. Standard door and frame assembly shall be manufactured to defeat ballistic assaults in accordance with UL Standard 752, Level 8.
2. Steel for face plates shall be 14 gauge, with ballistic proprietary core.
  - a. Doors for protection level 4 or higher will utilize HI hard anti-ballistic steel for the protective core.
3. Rails and stiles shall be fully welded to face plates and provide a flush surface on all edges.
4. Door unit shall be pre-hung with a continuous gear hinge in a steel frame.
5. Door and frame shall be mortised and reinforced at the factory for template hardware per hardware schedule.
6. Provide reinforcement and prep door/frame as required for door hardware installation including prep for electric strike.

E. Frame Construction:

1. Frame shall provide UL Level protection level to match bullet resistance of door.
2. Non-ricochet type.
3. Frame construction:
  - a. 16 gauge commercial steel.
4. Steel shall be free of scale, pitting, coil breaks or other surface defects.
5. Frames shall be welded and ground flush.
6. Standard tolerances shall be +/- 1/16" for frame opening width, height, and diagonal.

F. Door and Frame Finish:

1. Primed painted at factory.
2. Finish painting in field as specified in Division 9.

G. Glazing If scheduled Shall comply with UL 752, Level 8 protection.

H. Door hardware provided by door manufacturer:

- a. Hinges: SL11Continuous HD aluminum hinge (clear anodic coating)
- b. Anti-Jimmy device: Provide on out-swinging doors.
- c. LSDA heavy-duty closer, UL Level 8.
- d. Note: Remainer of door hardware specified in Section 08 71 00 and as scheduled on drawings as follows: Electric strike operated by security access reader (Reader provided by owner), panic device, wall bumper.
- e. Door Hardware Finish: US26D

I. Field alterations to the construction of the assembly fabricated under the acceptable standards are not allowed unless approved in writing by the manufacturer and the Architect.

J. Standard manufacturing tolerances +/- 1/16" shall be maintained.

## 2.2 PERFORMANCE CRITERIA

A. Ballistic Resistance:

- 1. Level 8 in accordance with UL 752 – Testing for Ballistic Resistance for the complete assembly including framing, glazing and panels.

## 2.3 ACCESSORIES

A. Anchors: Fully concealed manufacturer recommended.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Prior to beginning installation, verify that all supports have been installed as required by the Contract Documents and architectural drawings, and Shop Drawings have been approved.
- B. Notify Architect of any unsatisfactory preparation that is responsibility of others.
- C. Clean and prepare all surfaces per manufacturers recommendations as required for achieving the best results for the substrate under the project conditions.
- D. Verify field dimensions of openings prior to fabrication of framing.



- E. Coordinate structural requirements to ensure proper attachment and support.
- F. Do not begin installation of material until all unsatisfactory conditions have been resolved and approved by Architect.
- G. Door and frame manufacturer to prep for all door hardware specified in this section and hardware as specified in Section 08 71 00 and drawings.

### 3.2 INSTALLATION

- A. Installer to coordinate frame opening requirements and reinforcing with metal stud wall supplier.
- B. Do not begin installation until openings have been verified and surfaces properly prepared in accordance with Drawings.
- C. Install in accordance with manufacturer's instructions and UL 752. Set all equipment plumb.
- D. All products shall be installed per installation instructions provided by manufacturer.
- E. Door and frame assembly shall arrive on site completely pre-fabricated to field dimensions approved by Shop Drawings.
- F. Install framing and secure to structure in accordance with manufacturer's recommendations and approved shop drawings.
- G. Provide required support and securely fasten and set doors and frame plumb, square, and level without twist or bow.
- H. Apply sealant in accordance with manufacturer's recommendations as indicated in installation instructions.
- I. Remove excess sealant and leave exposed surfaces clean and smooth

### 3.3 PROTECTION

- A. Clean and protect door and frame assembly from damage during ongoing construction operations. If damage occurs, remove and replace as required to provide assembly in their original, undamaged condition.
- B. Inspection and Cleaning: Verify installation is complete and complies with manufacturer's requirements.

- C. Provide final cleaning of product and accessories, removing excess sealant, labels and protective covers.
- D. Touch-up, repair or replace damaged products prior to Substantial Completion.

END OF SECTION

## SECTION 08 34 63

### DETENTION HOLLOW METAL FRAMES

#### PART 1 GENERAL REQUIREMENTS

##### 1.1 SCOPE

- A. Supply and install all Detention Hollow Metal work as shown on the drawings and as specified herein.
- B. Coordinate with detention furnishings and fixtures that are to be factory installed to detention doors as detailed on the drawings.

##### 1.2 WORK INCLUDED IN THIS SECTION

The work required under this section consists of furnishing and installation all detention, security, and related items necessary to complete the work indicated on the drawings and described in this specification, including but not necessarily limited to the following:

- A. Detention hollow metal doors, frames, all 10 gauge
- B. Furnishing and delivery to the job site or designated vicinity location all embed anchor devices as shown or required to firmly anchor all materials specified in this section.
- C. Plant and field fittings, welding, filling, grinding, and caulking of materials installed under this section.
- D. Although such is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation.

##### 1.3 RELATED WORK SPECIFIED ELSEWHERE

- A. Finish painting in the field, Section 09 91 00.
- B. Final cleaning, Section 01 11 00.
- C. Receiving, unloading distribution, setting and building in of all embeds.

##### 1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Transport, store and erect security materials in a manner that will prevent rusting, distortion, or damage. Replace damaged material. Store clear of the ground and protect from water and the elements. Wrap and carton or crate to adequately protect during shipment and storage at jobsite.

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## 1.5 QUALITY ASSURANCE

- A. Manufacturer: Provide detention equipment products and items produced by manufacturers who have no less than five years experience in manufacturing equipment for maximum security and medium security installation. Submit written list of institutions for which such equipment has been provided.
- B. Provide products of same manufacturer for each type of items or unit required. Provide each item as a complete unit, complete with all accessories, fittings, fastenings, anchorages, and devices necessary for items to correctly function for purpose for which intended
- C. Installation shall be performed by manufacturer or his authorized representative under the manufacturer's direct supervision.
- D. Field Examination:
  - 1. At the direction of the Architect, the Contractor will destroy a randomly selected security hollow metal

## 1.6 SUBMITTALS

Comply with the requirements of Section 01 11 00.

- A. Shop Drawings: Submit complete shop drawings for fabrication, erection, and installation of all items of detention equipment. Include plans, elevations, and large scale details. Show anchorages and accessory items, and include electrical junction boxes, conduit and wiring locations and connections, to insure a complete and proper installation. All shop drawings shall be referenced to Architect's Door Schedule, Glazing Schedule, Detail Number and Hardware Group as applicable.
- B. Product Data: Submit manufacturer's product data and installation instructions for each standard equipment and hardware item.
- C. Warranty: Warrant all security detention equipment for workmanship, operation and locking mechanisms for a period of one year after final acceptance.

## 1.7 PRODUCT HANDLING

- A. Deliver detention and security equipment in cartons or crates to extent feasible.

## PART 2 MATERIALS

### 2.1 ACCEPTABLE MANUFACTURERS

- A. Acceptable Detention Hollow Metal Manufacturers:

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(Subject to compliance with basic functions and details of the specified item, products of only the following manufacturers that have been in use for five years are approved for bidding). **NO** other manufacturers are permitted.

1. Graham
2. Trussbilt Inc. - St. Paul, Minnesota
3. Bullet Guard – Sacramento, California
4. Havershaim - Atlanta, Georgia

B. All materials used in execution of work shall be new and conform to specifications of ASTM.

C. Fastening Devices:

1. All exposed screws and nuts shall be Torx security type or center pin rejection, to meet National Standard (ASTM 307 - Grade A).
2. In areas that are not required to be removed again, screws and nuts shall be flat head, having an extra head which will twist off when fully secured, leaving the main head flush without slots.
3. In areas where it is necessary to remove items from time to time, screws shall have slots or holes that require a special tool for removing same and must be such that standard tools will not fit.
4. Each type of fastener must be indicated on shop drawings.
5. All exposed screw fasteners shall be installed with LOCTITE, or approved equal thread locking adhesive/sealant.

## 2.2 ANCHORAGE DEVICES

A. For Weld Studs: Use TRW Division “headed” studs; weld to steel plates.

B. For Wire Anchors: Use ASTM A615 grade 40 deformed rebar; weld to 10 ga. steel plates formed as required.

C. For Steel Plate Anchors: Use galvanized steel sheets formed as required, thickness, sizes as indicated.

D. For Steel Plates: Use ASTM A36 steel; form as required.

E. For Expansion Anchors: Use FS FF-S-325 group II, type 3, class 3 sleeve type expansion anchors with FS QQ-A-325C type 1, Class 3 plated finish. Provide each anchor complete with bolt, expansion sleeve, hex nut, washer; 1/2 inch diameter size required with length as required for 4 inch minimum embedment depth except where indicated to be longer.

F. For Anchor Bolts Concealed From View: Use FS FF-S-325 group II, type 4, class 1 wedge type expansion anchors with FS QQ-Z-325C type 1, class 3 plated finish. Provide each anchor complete with bolt, expansion sleeve, hex nut, washer; 5/8 inch diameter size required with length as required for 2-3/4 inch minimum embedment depth.

08 34 63-3

## 2.3 DETENTION PRESSED METAL FRAMES

- A. Provide pressed steel frames for doors, security type transoms, side-lites, borrowed lites, observation, visitation, control, and exterior security windows.
  - 1. Exterior Frames: Commercial grade galvanized steel, ASTM A526, 12 gauge.
  - 2. Interior Frames: Commercial grade cold-rolled steel, ASTM A366 or commercial grade hot-rolled and pickled steel, ASTM A569. 12 gauge.
  - 3. All joints will be fully mitered and continuously welded inside the miter across the full depth and width of the frame.
- B. Mullion and/or Rail Members: Closed tubular shapes with no visible seams or joints. Weld all abutting members.
- C. Furnish all frames as a single, complete unit where possible. Large frames may be furnished in sections with factory prepared splices. Show all field required splices and splice details on shop drawings.
- D. Provisions for Accessories:
  - 1. Open ends closures: Provide steel gauge matching frame gauge. Weld in place and grind smooth.
- E. Glazed Openings in Frames:
  - 1. Frames for glazed openings will have non-removable stops on secure side and removable glazing beads on opposite side. Glazing beads will be formed steel angles, gauge to match frame. Factory drill beads for 1/4" diameter machine security screws at 2" maximum from each end and 6" maximum on center. Furnish all security screws and special tools.
  - 2. Where applicable, shall be provided with 1" minimum glass engagement or greater as required by glazing manufacturer and non-removable stops on the detention side and removable glazing beads opposite.
  - 3. Glazing beams for medium security frames shall be formed steel channels to the depth shown, and of the same gauge as the associated frame. Glazing beads shall be factory drilled and countersunk for flat or oval head machine screws and shall be secured at the factory with slotted flat head machine screws.
  - 4. Center pin rejection (Torx) security machine screws and special screwdrivers shall be furnished by the frame manufacturer for use to install glass and glazing in the field.
  - 5. Where tool resistant (T.R.) bar passes through frame, ribs of bar shall be notched the thickness of material that bar passes through, and be rotated 90 degrees to form positive lock joint. Also weld bar to frame where bar passes through.
  - 6. Frame rabbets shall be additionally reinforced to engage at least four threads of the stop or head fastening screws.
  - 7. Stop shall be painted to provide corrosion resistance on all surfaces including those concealed when stops or beads are in place.

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- F. Frame Anchors: Locate jamb anchors at 8" from top and 4" from bottom and at 16" on center maximum. Locate head and sill anchors at 6" from ends and at 16" on center maximum where the masonry opening is 40" or greater.
1. Anchors at Masonry: 1/8", tee shape, 12 gauge, adjustable galvanized steel drilled to allow passage of vertical rebar and grouting; or steel straps welded to embedded steel anchor plates or angles.
  2. Anchors at Concrete: 1/2" Nelson studs welded to frame. Reinforce frame and anchors with 12 gauge steel plate.
  3. Anchors at Steel: 10 gauge zee welded to steel and frame.
  4. Floor Anchors: 12 gauge steel welded to bottom of each jamb drilled for expansion anchors.
  5. Provide and install frame stiffener plates, made of 10 gauge bent steel, at 8" o.c. each way in all frames with over 6" continuous width or height (one piece).
- L. Dip Tray: Reuse existing trays.
- M. Speak-Thru: Reinstall existing Speak-Thru

## 2.5 FINISHING

- A. After assembly, smooth tool marks and surface imperfections by grinding, filling and sanding. Welded joints exposed to view and not continuously welded shall be filled with a metallic filler and ground smooth so as to show no exposed seam. This applied to both factory assembled and field assembled frame and detention equipment components.
- B. Clean surfaces thoroughly of rust, oil, and other impurities and phosphate coat to condition the surface in accordance with Federal Specification TT-C-490.
- C. Coat all surfaces, both inside and outside the frame, to a minimum thickness of 1 mil with rust inhibitive red iron oxide-zinc chromate primer (equal to Federal Specification TT-P-664).

## PART 3 EXECUTION

### 3.1 INSPECTION

- A. Installer of detention equipment must examine the substrates, rough-ins, and inserts related to installation of detention equipment and report in writing to the contractor of conditions detrimental to the proper and timely installation of this work. Do not proceed until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

### 3.2 PREPARATION

- A. General Contractor will receive, unload, store and protect detention and security equipment. Installer will verify and inventory all items and advise as to its proper storage.

### 3.3 INSTALLATION

#### Detention Equipment:

- A. Assembly units which are not factory assembled. Set units in place and anchor to abutting construction as indicated and in accordance with final shop drawings.
- B. Anchor to stud walls per manufacturer's Instruction.
- D. Install units plumb, square, properly aligned and securely anchored. Provide anchors, trim and accessories required for a complete, secure and functional installation.
- E. Make field connections, as detailed on final shop drawings. Perform welding using certified welders and grind all welds smooth.
- F. Touch up welds and damaged areas with specified shop primer.

### 3.4 PROTECTION AND CLEANING

- A. Handle all fixtures, material, assemblies and equipment to avoid injury to persons and to avoid damage to work in place. Satisfactorily repair or remove and replace work that has been damaged.
- B. Protect adjacent surfaces from damage and soiling.
- C. Cleaning will be provided as specified under Section 01 11 00, Cleaning.

END OF SECTION

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## SECTION 08 56 53

### BALLISTIC SECURITY TRANSACTION WINDOW FRAME

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

- A. BL5.5 Bullet Resistant Aluminum Frame Assembly, UL level 8.

##### 1.2 RELATED SECTIONS

- A. Section 08 88 53 Security Glazing

##### 1.3 REFERENCES

- B. Underwriters Laboratory UL 752-Standard for Bullet Resisting Equipment.
- C. ASTM C 1172 - Standard Specification for Laminated Architectural Flat Glass.
- D. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
- E. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- F. ASTM C 509 - Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material.

##### 1.3 ACTION SUBMITTALS

- A. Refer to Section 01 33 00 Submittal Procedures
- B. Product Data: For each type of framing including manufacturer recommended installation instructions.
- C. Shop Drawings: Include plans, elevations, sections, details, attachment to other work.
- D. Samples: For each exposed finish.

##### 1.4 INFORMATION SUBMITTALS

- A. Product Test Reports: Indicating compliance with requirements
- B. Warranty: Sample of finish warranty

## 1.5 CLOSEOUT SUBMITTALS

- A. Refer to Section 01 77 00 Closeout Submittals
- B. Maintenance data.

## 1.6 DELIVERY, STORAGE AND HANDLING

- A. Refer to Section 01 60 00 Product Requirements
- B. Deliver materials to the project site with the manufacturer's UL Listed Labels intact and legible. Handle the materials with care to prevent damage. Store materials inside and under cover, stack flat and off floor. Project conditions (temperature, humidity, and ventilation) shall be within the maximum limit recommendations provided by manufacturer. Do not install products stored in conditions outside manufacturer's recommended limits.

## 1.7 WARRANTY

- A. Workmanship Warranty: All materials shall be warranted against defects for a period of 1 year for the date of receipt at the project site. Provide certificates of manufacturer's standard limited warranty with closeout documents.
- B. Finish Warranty: Manufacturer's warranty against deterioration of factory finishes for the period of 5 years from the date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURED UNITS

- A. Basis of Design:
  - 1. Subject to compliance with requirements, provide products by the following:
    - a. Model BL5.5 manufactured by Total Security Solutions, Inc., 935 Garden Lane, Fowlerville, MI 48836, 866 734-6277. Attn: Sales Department, sales@tssbulletproof.com. Web: www.tssbulletproof.com.
  - 2. Subject to compliance with requirements, manufacturers with equivalent design may be acceptable if approved in accordance with Section 01 33 00 Substitution Procedures.

B. Design Performance:

1. Through the design, manufacturing techniques and material application the TSS Framing System shall be constructed of an extruded aluminum in 6061-T6 alloy/tempered.
2. Frame to have no exposed fasteners.
3. Corner joints shall consist of extruded and keyed aluminum spline.
4. All joints and connections shall be tight, providing hairline points and true alignment of adjacent members.
5. Panels shall not be removable from threat side.
6. Field alterations to the construction of the assembly fabricated under the acceptable standards are not allowed unless approved in writing by the manufacturer and the Architect.
7. Standard manufacturing tolerances +/- 1/16" shall be maintained.
8. Materials shall meet or exceed UL 752 requirements.

C. Rated two-piece U-Channel for fixed system:

1. Part # BL4.4 by Total Security Solutions, Inc., UL Level 8.
2. Clear anodized finish.

## 2.2 PERFORMANCE CRITERIA

A. Ballistic Resistant:

1. Level 8 in accordance with UL 752 – Testing for Ballistic Resistance for the complete assembly including framing, glazing and panels.

## 2.3 FABRICATION

- A. Head, sill and jambs shall be two-piece extrusions with no integral weep system at the sill, extrusions to allow for re-glazing with the use of removable stops.
- B. Mullions are three-piece extrusions with removable faces to allow for glazing and individual lite replacement.
- C. All joints and connections shall be tight, providing hairline joints and true alignment of adjacent members.
- D. Glazing must not be removable from the threat side of the sash.
- E. Provide to dimension heights and widths indicated on the Drawings.
- F. System shall be designed to accept glazing from 3-4 inches to 2-1/2 inches thick.

## 2.4 FRAME FINISH

- A. Factory-applied finish:
  - 1. Clear Anodic Finish - Satin: Architectural Class I, clear coating AA-M10C22A41 Mechanical Finish Chemical Finish: etched, medium matte; 0.70 mils minimum complying with AAMA 611 "Voluntary Specification for Anodized Architectural Aluminum"
- B. Cap the bottom of glazing with the corresponding finish material selected for frame.

## 2.5 GLAZING

- A. Glazing:
  - 1. Refer to Section 08 88 53 for glazing specification.
- B. Glazing gaskets:
  - 1. Interior: Closed cell neoprene.
  - 2. Exterior: Solid neoprene.

## 2.6 ACCESSORIES

- A. Anchors: Fully concealed manufacturer recommended.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Prior to beginning installation, verify that all supports have been installed as required by the Contract Documents and architectural drawings, and Shop Drawings have been approved.
- B. Notify Architect of any unsatisfactory preparation that is responsibility of others.
- C. Clean and prepare all surfaces per manufacturers recommendations as required for achieving the best results for the substrate under the project conditions.
- D. Verify field dimensions of openings prior to fabrication of framing.
- E. Coordinate structural requirements to ensure proper attachment and support.
- F. Do not begin installation of material until all unsatisfactory conditions have been resolved and approved by Architect.

### 3.2 INSTALLATION

- A. Do not begin installation until openings have been verified and surfaces properly prepared in accordance with Drawings.
- B. Install in accordance with manufacturer's instructions and UL 752. Set all equipment plumb.
- C. All products shall be installed per installation instructions provided by manufacturer.
- D. Security window units shall arrive on site completely pre-fabricated to field dimensions approved by Shop Drawings.
- E. Install framing and U-Channel sill and secure to structure in accordance with manufacturer's recommendations and approved shop drawings.
- F. Provide required support and securely fasten and set windows plumb, square, and level without twist or bow.
- G. Apply sealant in accordance with window and sealant manufacturer's recommendations as indicated in installation instructions.
- H. Remove excess sealant and leave exposed surfaces clean and smooth

### 3.3 PROTECTION

- A. Clean and protect windows from damage during ongoing construction operations. If damage occurs, remove and replace as required to provide windows in their original, undamaged condition.
- B. Inspection and Cleaning: Verify installation is complete and complies with manufacturer's requirements.
- C. Provide final cleaning of product and accessories, removing excess sealant, labels and protective covers.
- D. Touch-up, repair or replace damaged products prior to Substantial Completion.

END OF SECTION

## SECTION 08 71 00

### FINISH DOOR HARDWARE

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Door hardware.
  - 2. Miscellaneous finish hardware.
  - 3. Latch & lock guards
- B. Related Sections:
  - 1. Section 08 11 13 - Hollow Metal Doors and Frames.
  - 2. Section 08 14 16 - Wood Doors.
  - 3. Section 08 34 53 – Security Doors & Frames

##### 1.2 SUBMITTALS

- A. Comply with Section 01 33 00.
- B. Submit through Contractor to Architect. Prior to submitting, contact Architect to discuss door hardware/keying meeting. If Architect is elected, submittal will be reviewed at time of meeting. Supplier will make corrections as a result of meeting and distribute record copies to Architect and Contractor.
- C. Hardware Schedule: Submit final hardware schedule organized by "sets", to indicate specifically product to be furnished for each item required on each door.
- D. Templates: Furnish templates to each fabricator of doors and frames, as required for preparation to receive hardware.

##### 1.3 DOOR HARDWARE/KEYING MEETING

- A. Prior to ordering of hardware items, Contractor shall arrange meeting between, hardware supplier, Owner, and Architect to review and verify door hardware submittals and keying suggestions. This review meeting shall be considered as the submittal review. Any changes shall be incorporated in the hardware submittals and then resubmitted to Contractor and Architect as **record copy**. Contractor to notify all parties one (1) week prior to meeting date.

## 1.4 PRE-INSTALLATION MEETING

- A. Prior to installation of hardware items, Contractor shall arrange meeting between hardware installer, hardware supplier, and factory representatives of locks, locksets, exit devices, closers and specialty hardware items in order to review the installation requirements and procedures.

## 1.5 REFERENCES

- A. Comply with State of Arkansas Adopted ADA Accessible Guidelines in regard to accessible or handicapped features for all door hardware items used on this project.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Product Quality: Hardware items are to be ANSI Grade 1 Certification.

### 2.2 HINGES

- A. Manufacturers:
  - 1. Stanley
  - 2. Hagar
  - 3. Approved alternate
- B. Material:
  - 1. Provide full mortise-type hinges with stainless steel pins, except steel pins with steel hinges; non-removable for exterior and public interior exposure, non-rising for non-security exposure, flat button with matching plugs. Provide stainless steel hinges on exterior applications.
  - 2. Ball-bearing Function: Swaged, inner leaf beveled, square corners.
- C. CONTINUOUS HINGES
  - 1. Roton, model 780-224 HD series. (No substitutions accepted)
  - 2. Warranty: Manufacturer's lifetime warranty.

### 2.3 LOCKS, LATCHES, AND BOLTS

- A. Manufacturers:
  - 1. Schlage ('ND' Vandlgard Series – Cylindrical lockset with Rhodes style lever handle)
    - a. Falcon
    - b. Corbin Russwin
    - c. Best Locks
  - 2. Approved Alternate Manufacturers"
    - a. Corbin Russwin

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- b. Best Locks
- c. Approved alternate. Refer to Section 01 60 00.
- 3. Special operation:
  - a. Provide privacy "OCCUPIED" indicator for toilet doors.
- 4. Warranty: ND Series Cylindrical (10-Years); L Series Mortise (3-year), Electro-mechanical (1-year)

C. Materials:

- 1. Strikes: Wrought box strikes, with extended lip for latch bolts, except open strike plates may be used in wood frames. Provide dustproof strikes for foot bolts.
- 2. Locks: Cylindrical locksets equipped with 6-pin tumbler; with interchangeable cores and keyed alike. Provide 2-3/4" backset. Provide three keys for each lock.
  - a. **All locks to have interchangeable cores.**

## 2.4 DOOR CONTROL DEVICES

A. Wall Bumper:

- 1. Rockwood 400 Series, Concave Style
- 2. Glynn-Johnson 60 Series, Concave Style
- 3. Approved alternate.

B. Closers:

- 1. Interior Doors:
  - a. LCN 1460 Series (with extra duty arm where called for on hardware schedule)
  - b. Approved alternate
  - b. Warranty: Provide minimum 30 year warranty for closer operation.
  - c. Install per 3.2.E
  - d. Provide spring cushion series for security door specified in Section 08 34 53.
- 2. Provide with a minimum of ten (10) year manufacturer's warranty.
- 3. Provide all brackets and spacers necessary for all door and frame conditions.

C. Security Access Controlled Doors

Security Access System (Type 1):

- 1. Provide classroom lockset
- 2. Electric strike with associated power supply in concealed location, manufactured by Assa Abloy 800c-12/24d-630, Locknetics or approved equal. Access control device is provided by owner.
  - a. Provide strike type as required to coordinate with latch and frame.
  - b. Provide all low voltage control wiring as required from access control device junction box to power supply and to electric strike. Conceal all wiring in walls, ceilings, doorframes, etc. Refer to electrical drawings for locations.

D. Materials

- 1. Provide grey rubber exposed resilient parts.
- 2. Any floor stops other than that specified will not be acceptable.
- 3. All closer cylinders are to be cast iron.

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E. Panic Device:

Manufacturer and Product:

1. Von Duprin 99 Series
2. No substitutions allowed.
4. Provide minimum three (3) year manufacturer's warranty.
5. Unless called for otherwise, or where a fire door occurs, all panic devices will be cylinder doggable.

## 2.5 MISCELLANEOUS HARDWARE

A. Silencers: Provide in metal door frames, unless not permitted for fire rating, or unless bumper-type weather-stripping is provided; three for each single door frame, two for double-door frame.

1. 3M
2. Hager
3. Glynn Johnson
4. Approved alternate.

B. Kick Plates

1. Trimco 9" kickplates
2. Aluminum Finish

C. Latch/Lock Guard

1. Nominal 10 inches long, 13 gauge stainless steel manufactured by Ives or approved alternate.
2. Secure to door and frame per manufacturer's instruction for vandal-proof installation.
3. Provide stainless steel, US32D finish.
4. Provide type as required for door and lockset type.

D. Pull and Push Manufacturers:

1. Rockwood model 111 x 70C pull plate (125" thick x 4" x 16" plate with 10" pull); model 73C push (.125" thick x 4" x 16")
2. Approved alternate.

## 2.6 FINISH

A. All exposed interior hardware and door control devices to be furnished with US26D Finish. Exterior hardware finish to be US32D.

B. Painted hardware items to match color of door control devices.

## 2.7 FABRICATION

A. Finish and Base Material Designations: Number indicate BHMA Code or nearest traditional U. S. commercial finish. US26D & US32D or equivalent.

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## PART 3 EXECUTION

### 3.1 COORDINATION

- A. Hardware supplier to verify and coordinate door and frame preparation, including required reinforcement in hollow metal doors and frames for hardware attachment.

### 3.2 INSTALLATION

- A. Hardware Mounting Heights: Door and Hardware Institute Recommended Locations for Builders Hardware for Standard Steel Doors and Frames, except as otherwise indicated.
- B. Install each hardware item to comply with manufacturer's instructions and recommendations.
- C. Door closers, door coordinators, and frame-mounted overhead stops shall be installed to frames, using machine thread type screws. Holes shall be tapped in hollow metal frames to accept threaded screws. Screws shall be of a size as recommended by hardware manufacturer.
- D. All other hardware items mounted to door shall be required to be mounted to door with appropriate through bolts for wood doors and machine thread type screws for hollow metal doors. Holes shall be tapped in hollow metal door reinforcement to accept threaded screws. Screws shall be of a size as recommended by hardware manufacturer.
- E. **'TEK' TYPE SCREWS ARE NOT TO BE USED.** Use fasteners provided by hardware supplier for each corresponding hardware device for door and frame type and as specified in this specification.
- F. Install each hardware item per manufacturer's instructions. If any item fails to operate properly because of improper installation, it shall be the installer's responsibility to correct. If item continues to malfunction or if Contractor or Architect suspects any hardware item to be defective, hardware supplier shall examine item in question. If Supplier determines item is defective, he shall replace item at no extra cost to owner.

### 3.3 ADJUSTING

- A. Hardware Adjustment: Return to project one month after Owner's occupancy, and adjust hardware for proper operation and function.

### 3.4 KEYING

- A. Locksets and cylinders are to be master keyed to present schedule. Prepare and submit a detailed list of complete keying recommendations to the Architect, which will be discussed during keying meeting. Coordinate desired keying schedule with owner prior to submitting of keying recommendation. Furnish three (3) keys for each individual lock in addition to three (3) master keys.

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- B. Each key for entire project to be stamped for identification.
- C. Provide construction keying for all locks. When project is substantially complete, disable all construction keying.

### 3.5 LATCH/LOCK GUARDS

- A. Latch and lock guards are to be installed on each door with electric strike.

### 3.6 HARDWARE ALLOWANCE: **REFER TO SECTION 01 21 13**

- A. Provide an allowance per section 01 21 13 for any changes or additions to door hardware. The hardware sets listed on Door Hardware Schedule are to be included in contract price.

### 3.7 TYPICAL DOOR HARDWARE FOR EXTERIOR AND INTERIOR DOORS

- A. Each leaf of all interior doors, unless noted otherwise, is to receive the following hardware items:
  - 1. Three butt hinges for doors up to 3' 4"; For door leaves 3'-6" to 3'-10", provide 2 pairs butt hinges. For leaves 4'-0" or wider provide continuous hinge as specified.
  - 2. Provide three silencers for single leafs, two silencers for double leafs.
- B. Door Hardware Schedule: Refer to Door Hardware Sets on Drawings.

END OF SECTION

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## SECTION 08 71 65

### SECURITY SCREWS

#### PART 1 GENERAL

##### 1.1 SCOPE

- A. The Contractor shall furnish all labor, materials, tools, equipment, and services for all security screws as indicated in accord with provision or intent of Contract Documents.
- B. Completely coordinate with work of all other trades.
- C. Although such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation.

##### 1.2 SHOP DRAWINGS

- A. Per Supplementary General Conditions

##### 1.3 COORDINATION

- A. Coordinate work and scheduling of the work of this section with other trades for anchorage and location.

##### 1.4 INSPECTION

- A. Examine all sub-surfaces to receive work and report in writing to General Contractor, with a copy to the company, any conditions detrimental to work. Failure to observe this injunction constitutes a waiver to any subsequent claims to the contrary and will make this Contractor responsible for any corrections the company may require. Commencement of work will be construed as acceptance of all sub-surfaces.

##### 1.5 DELIVERY AND STORAGE

- A. Deliver all manufactured materials in original containers bearing manufacturer's name and brand. Use only one (1) brand for material throughout job. Store materials within building in locations directed by General Contractor.

#### PART 2 MATERIALS

##### 2.1 SECURITY SCREWS

- A. All exposed fasteners in the project, including fasteners used in fabrication of project components, shall be Security Screws as specified herein, unless the component or location is specifically excluded by inclusion on the list below.

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B. Excluded Items and Locations:

1. Mechanical, electrical, generator, or electronic equipment rooms, including roof mounted equipment.
2. Control rooms and their attendant equipment in those rooms, except control panels.
3. Above suspended ceilings, behind access panels and within pipe or duct chases.
4. Kitchen, medical, property and laundry equipment.
5. Standard (porcelain) plumbing fixtures.
6. Moveable furnishings, storage shelving, cabinet hardware.
7. Wall board screws.
8. All areas not within the secure perimeter of the facility.

C. All security screws shall be operable by tools produced for use on the specified security screws by manufacturer or other fabricators licensed by them.

D. Security screw head style and plating shall be selected as appropriate for installation requirements strength and finish of adjacent materials except all screws in painted materials shall be stainless steel. Size and shape variation shall be such that no more than 12 different tools/wrenches are required for all security screws on project.

E. Types Allowed:

1. Pinned "Allen" head.
2. Pinned "Torx" head.

F. Provide six complete sets of tools required for all security screws on the project.

## 2.2 SOURCES

A. Security screws may be obtained through the following dealers:

1. Sentry Security  
Fasteners Inc.  
Peoria, IL  
Telephone: (309)693-2800
2. Riteloc Company  
Freeport, NY  
Telephone: (516)378-1020
3. Holo-Krome Company  
West Hartford, CT  
Telephone: (203)523-5235
4. Tamper-Pruf Screws, Inc.  
Paramount, CA  
Telephone: (213)531-9364

5. Camcar Division of Textron, Inc.  
Rockford, IL  
Telephone: (815)226-7721
6. Safety Socket Screw Corporation  
Chicago, IL  
Telephone: (312)763-2020
7. Bryce Fastener Company, Nc.  
2924 Western Ave.  
Seattle, WA  
Telephone: (1-800)542-7031

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Installation shall be made in accordance with the manufacturer's instructions.
- B. Check and adjust all operating mechanisms to insure proper function in accordance to the manufacturer's recommendation.

### 3.2 CLEAN UP

- A. Per Supplementary General Conditions.

END OF SECTION

08 71 65-3

## SECTION 08 88 53

### SECURITY GLAZING

#### PART 1 – GENERAL

##### 1.1 SECTION INCLUDES

- A. Bullet resistant glass-clad polycarbonate low spall glass, UL level 8.

##### 1.2 REFERENCES

- A. Underwriters Laboratory UL 752-Standard for Bullet Resisting Equipment.
- B. ASTM C 1172 - Standard Specification for Laminated Architectural Flat Glass.

##### 1.3 ACTION SUBMITTALS

- A. Refer to Section 01 33 00 Submittal Procedures.
- B. Product Data: Including manufacturer recommended installation instructions.
- C. Shop Drawings: Include plans, elevations, sections, details, attachment to other work.
- D. Samples: For each exposed glazing type.

##### 1.4 INFORMATION SUBMITTALS

- A. Product Test Reports: Indicating compliance with requirements
- B. Warranty: Sample of warranty

##### 1.5 CLOSEOUT SUBMITTALS

- A. Refer to Section 01 77 00 Closeout Submittals.
- B. Maintenance data.

##### 1.6 DELIVERY, STORAGE AND HANDLING

- A. Refer to Section 01 60 00 Product Requirements.

- B. Deliver materials to the project site with the manufacturer's UL Listed Labels intact and legible. Handle the materials with care to prevent damage. Store materials inside and under cover, stack flat and off floor. Project conditions (temperature, humidity, and ventilation) shall be within the maximum limit recommendations provided by manufacturer. Do not install products stored in conditions outside manufacturer's recommended limits.

## 1.7 WARRANTY

- A. Workmanship Warranty: All materials shall be warranted against defects for a period of 1 year for the date of receipt at the project site. Provide certificates of manufacturer's standard limited warranty with closeout documents.
- B. Finish Warranty: Manufacturer's warranty against deterioration of factory finishes for the period of 5 years from the date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURED UNITS

#### A. Basis of Design:

1. Subject to compliance with requirements, provide products by the following:
  - a) Total Security Solutions, Inc., 935 Garden Lane, Fowlerville, MI 48836, 866 734-6277. Attn: Sales Department, [sales@tssbulletproof.com](mailto:sales@tssbulletproof.com). Web: [www.tssbulletproof.com](http://www.tssbulletproof.com).
2. Subject to compliance with requirements, manufacturers with equivalent design may be acceptable if approved in accordance with Section 01 60 00 Substitution Procedures.

### 2.2 BULLET-RESISTANT GLASS-CLAD POLYCARBONATE GLAZING - LOW SPALL

- A. Through the design, manufacturing techniques and material application the TSS Bullet Resistant Glass-Clad Polycarbonate Low Spall Glass shall be constructed of multiple layers of glass/polycarbonate sheets and PVB resin interlayers.
- B. Glass shall be tested to allow for glass spall.
- C. Spall shall be tested to not pass through 1/8" paper test material that is spaced 5 inches from glass when tested with projectiles.
- D. Glass shall meet a UL Standard 752 Level 8 rating.
- E. Thickness of glass shall range from 2-1/2" thick.



## 2.3 FABRICATION

- A. Tolerances: All joints and connections shall be tight, providing hairline joints and true alignment of adjacent members
- B. Product to be meet UL level 8 protection:
  - 1. TSS 0008 L/S shall be 2-1/2" thickness.
- C. Coordinate with owner provided speak through system and glass penetration.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Prior to beginning installation, verify that areas have been prepared as required by the Contract Documents and architectural drawings, and Shop Drawings have been approved.
- B. Notify Architect of any unsatisfactory preparation that is responsibility of others.
- C. Clean and prepare all surfaces per manufacturers recommendations as required for achieving the best results for the substrate under the project conditions.
- D. Do not begin installation of material until all unsatisfactory conditions have been resolved and approved by Architect.

### 3.2 INSTALLATION

- A. Do not begin installation until areas have been verified and surfaces properly prepared in accordance with Drawings.
- B. Install in accordance with manufacturer's instructions and UL 752. Set all equipment plumb.
- C. Apply sealant in accordance with manufacturer's recommendations as indicated in installation instructions.
- D. Remove excess sealant and leave exposed surfaces clean and smooth

### 3.3 PROTECTION

- A. Clean and protect material from damage during ongoing construction operations. If damage occurs, remove and replace as required to provide voice ports in their original, undamaged condition.
- B. Inspection and Cleaning: Verify installation is complete and complies with manufacturer's requirements.

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- C. Provide final cleaning of product and accessories, removing excess sealant, labels and protective covers.
- D. Touch-up, repair or replace damaged products prior to Substantial Completion.

END OF SECTION

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## SECTION 09 22 16

### NON-STRUCTURAL METAL FRAMING

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Non-load bearing metal studs and accessories for wall assemblies.
- B. Wood Blocking for wall-mounted items.

##### 1.2 RELATED SECTIONS

- A. Section 09 29 00 - Drywall: Gypsum interior sheathing.

##### 1.3 REFERENCES

- A. AISI - Standard for Cold-Formed Steel Framing General Provisions.
- B. AISI - North American Specification (NASPEC) for the Design of Cold-Formed Steel Structural Members - 2001.
- C. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
- D. ASTM A 780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
- E. ASTM A 1003 - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members.
- F. ASTM C 645 - Standard Specification for Nonstructural Steel Framing Members - 2006.
- G. ASTM C 754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
- H. ASTM C 1513 - Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections.
- I. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- J. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
- K. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- L. ASTM E 413 - Classification for Rating Sound Insulation.
- M. GA-600 - Fire Resistance Design Manual.

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## 1.4 DESIGN REQUIREMENTS

- A. Design steel in accordance with American Iron and Steel Institute Publication "Specification for the Design of Cold-Formed Steel Structural Members" or the North American Specification for the Design of Cold-Formed Steel Structural members, except as otherwise shown or specified.
- B. Design loads: As indicated on the Architectural Drawings. 5 PSF minimum design lateral load is required for interior walls by the building code. Shaftwall framing minimum design lateral load is typically 5 - 15 PSF.
- C. Design framing systems to withstand design loads without deflections greater than the following:
  - 1. Interior Non-Load Bearing Walls: Lateral deflection of:  $L/240$ . (*for gyp. bd.*)
  - 2. Interior Non-Load Bearing Walls: Lateral deflection of:  $L/360$ . (*cer. tile*)
- D. Design framing system to accommodate deflection of primary building structure and construction tolerances.
- E. Responsibilities: 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, and displaying a classification label from, an independent testing agency acceptable to the authority having jurisdiction.
  - 1. Construct fire-resistance-rated partitions in compliance with tested assembly requirements indicated in drawings.
  - 2. Rated assemblies to be substantiated, from applicable testing using the proposed products, by Contractor.
  - 3. Both metal framing & wallboard manufacturers must submit written confirmation that they accept the other manufacturer's product as a suitable component in the assembly. Acceptance is as follows:
    - a. If installation of both products is proper, no adverse effect will result in the performance of one manufacturer's product by the other's products.
    - b. Combining products can be substantiated by required assembly tests.

## 1.5 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Submit manufacturer's product literature and data sheets for specified products.
- C. Manufacturer's certification of product compliance with codes and standards.

## 1.6 QUALITY ASSURANCE

- A. Contractor shall provide effective, full time quality control over all fabrication and erection complying with the pertinent codes and regulations of government agencies having jurisdiction.
- B. Contractor to conduct pre-installation meeting to verify project requirements, substrate conditions, and manufacturer's installation instructions.

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## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Notify manufacturer of damaged materials received prior to installing.
- B. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Store materials protected from exposure to rain, snow or other harmful weather conditions, at temperature and humidity conditions per the recommendations of ASTM C754 section 8.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
  - 1. ClarkDietrich Building Systems, 9100 Pointe Drive, Suite 210, West Chester, OH. Phone: 513-870-1100. [www.clarkdietrich.com](http://www.clarkdietrich.com), [info@clarkdietrich.com](mailto:info@clarkdietrich.com).
  - 2. Other manufacturers as referenced in this section for specific products.
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.
- C. All products to be manufactured by current members of the Steel Stud Manufacturers Association (SSMA), Steel Framing Industry Associates (SFIA), or the Certified Steel Stud Association (CSSA).

### 2.2 MATERIALS

- A. Steel: Galvanized Steel meeting or exceeding the requirements of ASTM A 1003.
  - 1. Coating: Galvanized G60 (Z180) coating minimum or equivalent, complying with ASTM C 645. **Stud finish MUST be hot dipped galvanized. Galvanneal finish is not acceptable. G60 must be used at all EXTERIOR locations. G40 finish is allowed at interior locations.**

### 2.3 COMPONENTS

- A. Nonstructural Studs:
  - 1. Flange Length: 1 1/4 inch (32mm) 125 flange.
  - 2. Web Depth: As indicated on drawings.
  - 3. Minimum Material Thickness: Gauge as required by stud legend shown on drawings.
  - 4. Punch Outs: 12 inches (305mm) from base and every 48 inches (1219mm) thereafter.
- B. Nonstructural Track: Cold-Formed galvanized steel runner tracks
  - 1. Flange Length: 1 1/4 inch (32 mm) T125 flange.
  - 2. Web: Track web to match stud web size.
  - 3. Minimum Material Thickness: Unless noted otherwise on drawings match stud gauge.
  - 4. Minimum Material Thickness: Track thickness to match wall stud thickness.

- C. Deflection Track: Cold-Formed Deep Leg Runner Slotted Slip Track.
  - 1. Leg Length: 2 inch (51 mm) T200 flange.
  - 2. Leg Length: 2 1/2 inch (63 mm) T250 flange.
  - 3. Leg Length: 3 inch (76mm) T300 flange.
  - 4. Leg Length: 3 1/2 inch (89 mm) T350 flange.
  - 5. Leg Length: As required by design.
  - 6. Minimum Material Thickness: As required by design.
  - 7. Minimum Yield Strength: 33ksi (227 MPa) (for 33mils through 118mils).
  - 8. Minimum Yield Strength: 50ksi (345 MPa) (optional for 54mils and up).
  - 9. Minimum Yield Strength: As required by design.
- D. U-Channel (CRC Cold Rolled Channel):
- E. Furring Channel: Furring existing walls and suspended ceiling applications.
  - 1. Size: 087F125-30 7/8 inch (22mm) Furring Channel 30mils (20ga Drywall).
  - 2. Size: 087F125-33 7/8 inch (22mm) Furring Channel 33mils (20ga Structural).
  - 3. Size: 150F125-30 1 1/2 inch (38mm) Furring Channel 30mils (20ga Drywall).
  - 4. Size: 150F125-33 1 1/2 inch (38mm) Furring Channel 33mils (20ga Structural).
- F. Framing Accessories: Provide accessories as required in this project.
  - 1. Flat Strapping for Backing Strip.
  - 2. Flat Strapping and bridging for lateral bracing.
  - 3. L-Angles.
  - 4. SwiftClip Fixed Connection Angles.
  - 5. Deflection Slip ConnectorsClarkDietrich™ Building Systems-Deflection Clips: Fast Strut™ / Fast Top™ Clips / FastClip™ Slide Clips / QuickClip™ / Slide Clip™ (SD), or approved alternate. Provide clip as required for each situation to compensate for deflection of structure.
- G. Fasteners: Self-drilling, self-tapping screws; complying with ASTM C 1513 - Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections.
- H. Touch-Up Paint: Complying with ASTM A 780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

## PART 3 EXECUTION

### 3.1 INSPECTION

- A. Inspect supporting substrates and structures for compliance of proper conditions for installation and performance of the cold-formed structural framing.

### 3.2 PREPARATION

- A. Prepare attachment surfaces so that they are plumb, level, and in proper alignment for accepting the cold-formed structural framing.

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### 3.3 COORDINATION WITH OTHER TRADES

- A. It will be a requirement of this section to verify and coordinate work with other trades and specification sections. Do not begin work on concrete slabs on grade or elevated concrete slabs until minimum strength and cure time has been reached.

### 3.4 FABRICATION

- A. Prior to fabrication of framing, submit product submittal sheets to the architect or engineer to obtain approval.
- B. Framing components may be preassembled into panels prior to erecting. Prefabricate panels so they are square, with components attached in a manner which prevents racking and minimizes distortion during lifting and transport.
- C. Cut all framing components square for attachment to perpendicular members or as required for an angular fit against abutting members.
- D. Plumb, align and securely attach studs to flanges of both upper and lower runners, except that in the case of interior, non-load bearing walls where studs need not be attached to upper or lower runners.
- E. Splices in members other than top and bottom runner track are not permitted.
- F. Provide temporary bracing where required, until erection is complete. Fastening of components shall be with welding or with minimum 1 #8 screw both sides of flange. Welds shall conform to the requirements of AWS D.1.1, AWS D.1.3 and AISI Manual Section 4.2. All welds shall be touched up using zinc-rich paint. Wire tying will not be permitted.
- G. Cutting of steel framing members may be accomplished with a saw or shear. Torch cutting of load bearing studs will not be permitted.
- H. Install headers in all openings in axially loaded walls that are larger than the stud spacing in the wall. Form headers as shown on drawings.
- I. Unless shown otherwise on drawings, brace top of metal stud walls to structure above at max. 4'-0" O.C. with minimum 20 gauge stud bracing.
- J. Insulation equal to that specified elsewhere shall be provided in all double jamb studs and doubled headers not accessible to insulation contractors.
- K. Care should be taken to allow for additional studs at intersections, corners, doors, windows, steel joists, diagonal bracing and as called for in the shop drawings.

### 3.5 INSTALLATION – DEFLECTION TRACKS AND DEFLECTION SLIDE CLIPS

- A. Unless noted otherwise, deflection tracks are to be installed at top of interior and exterior walls terminating directly below and/or attaching to beams joists, roof or floor deck, purlins, or other items subject to deflection.

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- B. Provide deflection slip connectors attached to stud walls from structure where studs extend vertically past a structural item such as but not limited to a beam or elevated floor edge angle.

### 3.6 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before substantial completion of final installation.

END OF SECTION

09 22 16-6



## SECTION 09 29 00

### DRYWALL

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Furnish materials and labor to complete installation of all interior drywall and miscellaneous metal trim items as indicated on plans and specified herein.
- B. Gypsum board surface texturing
- C. Wood Blocking

##### 1.2 SUBMITTALS

- A. Comply with requirements of Section 01 33 00.

##### 1.3 RELATED SECTIONS

- A. Section 09 22 16 – Non-Load Bearing Metal Stud Wall Framing
- B. Section 09 91 00 - Painting.

##### 1.4 REFERENCES

- A. ASTM C1396-Standard specification for gypsum board
- B. ASTM E90- Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements (ISO 140, Part 3)

##### 1.5 ACOUSTICAL PERFORMANCE

- A. Gypsum board wall assemblies for academic and office areas to have a minimum sound transmission class (STC) of 41.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS:

- A. All gypsum board shall be type “X” fire code, manufactured by Gold Bond, USG, or CertainTeed. Thickness as indicated on drawings. Provide water-resistant in damp areas and where called for. All gyp board shall be installed in accordance with manufacturer's printed instructions and as specified herein. Use water resistant materials in shower areas.

09 29 00-1

B. Gypsum board thickness

1. Unless noted otherwise in this specification or on drawings, gypsum board thickness to be 5/8".

PART 3 EXECUTION

3.1 INSTALLATION:

A. Painted Gypsum Board:

1. In areas calling for painted gypsum wallboard 5/8 thick, apply with length parallel to the studs in lengths sufficient to extend from floor to ceiling with no horizontal joints.
2. Attachment to be by screws 12 inch o.c. in the field and 8 inch o.c. along vertical abutting edges, and 7 inch o.c. on ceiling areas. Type 'X' shall be attached 7 inch o.c. edges, ends, and field.
3. All taping and texture shall be done in accordance to printed instructions as supplied by Gold Bond and approved by the Architect. All texture shall be approved by the Architect before proceeding with the work.
4. At metal stud sound walls with multiple layers of gypsum board on one or both sides, each layer is to be taped and floated to deck. Outer layer to be finished as well. At deck, cut gypsum board to fit profile of deck. Seal joint at deck with continuous bead of polyurethane sealant.
5. Provide metal "J" mold where edge of gypsum board abuts a different material or edge of gypsum board is to remain exposed.
6. All painted gypsum board will be textured per this specification unless noted otherwise.
7. Suspended drywall framing shall be attached to structure with No. 12 gauge hanger wires spaced not more than 2'-0" on center in one direction and 2'-0" on center in the other.

B. Stud Framing

1. Align floor and ceiling tracks to assure plumb partition. Secure the track with suitable fasteners at 24" O.C. maximum. Stud spacing to be 16" o.c. for door and window openings up to 4'-0" wide, reinforcing shall occur through use of a 20 gauge stud screw attached to frame anchors. On openings 4'-0" wide and over, use 2-20 gauge studs back to back against frame and securely attached.

3.2 GYPSUM BOARD SURFACE TEXTURING:

- A. Where exposed to view, provide light to medium "orange peel" gypsum compound texture on gypsum board surfaces and where called for on drawings unless noted otherwise.
1. Provide two 2' x 2' mockup boards with both light and medium orange peel finish for Architect's and Owner's review and approval.
- B. Wall to have level 4 finish or better.
- C. **Do not** texture on surfaces scheduled to receive vinyl wall covering or Dry Erase Coating.
- D. Texture to be uniform on walls throughout building.

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- E. Contractor to apply orange peel texturing to sample mockup panel and be approved by Architect prior to any further application

### 3.3 CONTROL JOINTS

- A. Galvanized metal control joint, Model 093 by USG or approved alternate.
- B. Control joints are to be provided at approximately 30'-0" o.c. horizontally and vertically at wall, ceiling, light coves and furrdown installations. Joints should be located at corner of door or window heads if spacing allows and where shown or called for on drawings. These shall be considered minimum requirements.
- C. Drywall contractor will repair any cracks in drywall for the one-year warranty period.

### 3.4 WOOD BLOCKING

- A. Install 2 x wood blocking in walls where concealed behind drywall for anchoring of wall-mounted items such as (but not limited to) wall mounted door hardware, markerboards, tackboards, projector screens, TV brackets, etc. **Metal plate backing will not be accepted for anchoring of wall-mounted items.**
- B. Provide blocking treated for fire resistance where required by code and as specified or called for.

### 3.5 CLEAN-UP

- A. The Contractor shall be responsible for complete clean up on his contract at completion of same.

END OF SECTION

09 29 00-3

## SECTION 09 31 13

### CERAMIC TILE/PORCELAIN TILE

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section 03 30 00 - Cast-In Place Concrete: Concrete slab moisture mitigation
- B. Furnish all materials, labor, tools, equipment, services, operations and incidentals necessary to complete all ceramic tile work as indicated in the drawings and specified.
- C. Pre-Install meeting

##### 1.2 RELATED SECTIONS:

- A. Gypsum Drywall Systems: Section 09 29 00.
- B. Wall Tile Backer Board: Section 09 29 00
- C. Performed Expansion Joints: Section 07 95 13
- D. Sealing of Joints: Section 07 92 00

##### 1.3 QUALITY ASSURANCE:

- A. Standards: Comply with standards specified in this section.
- B. Subcontractor / supplier providing work under this section will install work specified in this section with their company's own installers, employed by the company. **Subcontracting of installation will not be allowed unless approved by Architect prior to bid.**
- C. Qualifications of Manufacturer: Products used in the work of this section shall be produced by manufacturer regularly engaged in manufacture of similar items and with a history of successful production.
- D. Qualifications of Installers: Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.

##### 1.4 SUBMITTALS:

- A. Submit through Contractor to Architect, comply with Section 01 33 00.
- B. Manufacturers' Data: As soon as possible after award of the Contract, submit:

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1. Complete materials list of all items proposed to be furnished and installed under this section, including manufacturer's recommended installation procedures.
2. Manufacturers' specifications and other data required to demonstrate compliance with the specified requirements.

1.5 SAMPLES:

- A. Contractor shall submit samples of all ceramic and porcelain tile to be used on this work.

1.6 GUARANTEE:

- A. All work under this section shall be guaranteed free from defects in material and workmanship for a period of one (1) year from date of final acceptance.

1.7 PRE-INSTALL MEETING:

- A. Prior to tile installation, Contractor will schedule a meeting with the tile installer, Owner and Architect.
- B. Items for discussion will be topics such as expectations, tile patterns, verification of tile and grout colors, special conditions, and other items as deemed necessary.

PART 2 PRODUCTS

2.1 MATERIALS:

- A. Tile: Tile shall be Standard Grade in accordance with applicable requirements of the tile Council of North America (TCNA) 137.1-(current edition). Furnish a properly executed certificate of grade in the standard form of Master Grade Certificate. Tile shall be delivered to the work in the manufacturer's unopened package sealed with standard grade certificates, and shall be branded with or have sealed within the shipping marks and other designations corresponding to the information given on the executed certificate of grade.
- B. Unless specifically called for, tile shall be equal to those described below as manufactured by: Dal Tile, The American Olean Tile Company, Trinity Tile Company, or approved alternate.

2.2 TILE TYPES:

The following tiles as manufactured by the Company listed, shall be the standard of equality design and color. Other manufacturers must meet or exceed the tile NOTED in each case and be approved by Architect. Appearance will be a definite factor in selection.

A Wall Tile:

1. Provide 8" x 24" Daltile color wheel linear Matte Architectural Gray 0709 glazed wall tile and 4" x 12" x 5/16" glazed bullnose Daltile S-44C9MOD Matte Architectural Gray.

B. Floor Tile

1. Provide 12"x24" porcelain tile, Daltile Volume 1.0, color Reverb Ash VL74

09 31 13-2

2. Base: Provide 6"x12" Daltile Volume 1.0 cove base P-36C9 6"x12" color Reverb Ash VL74. Base tile to have surface type cove angle for thin set installation.
- C. Edge Trim: Provide "Schiene" series or "Reno-U" series metal edge and transition strips manufactured by Schluter or approved alternate. Install "Schiene" series at all locations where tile transitions to a different flooring material or "Reno-U" series where tile transitions to concrete floor.

## 2.3 MORTAR

- A. Mortar/Adhesive: Tile wall and floor installation (Interior wet areas):
  1. Manufacturer/Product:
    - a. Mapei
    - b. Laticrete Latapoxy SP-100 (700 series), meeting ANSI A108.6 and A118.3.
    - c. Approved alternate
  2. Provide where installing tile in shower enclosures, toilets or similar areas with a potential of water intrusion.

## 2.4 GROUT

- A. Following setting and curing of installed floor and wall tile, grout joints with epoxy grout for tile installation on interior walls and floors:
  1. Manufacturer/Product:
    - a. Mapei Kerapoxy CQ, meeting ANSI A118.3.
    - b. Laticrete Spectralock Pro Premium, meeting ANSI A118.3.
    - c. Approved alternate.
- B. Cure installed tile as per manufacturer's written instructions prior to installation of grout.
- C. Water shall be fresh, clean and free from deleterious amounts of acid, alkali, or any organic matter.
- D. Grout color as selected by Architect from Mapei or Laticrete standard color selection. In room where more than one grout type is used, color grout shall be consistent throughout.
- E. Sealants for Tile:
  1. 100 percent silicone sealant, Mapei "Mapesil T" silicone sealant, Laticrete "Latisil" silicone sealant, or approved alternate.
  2. Provide sealant in place of grout where wall tile butts hollow metal or aluminum door and window frames.
- F. At tile shower enclosures, grout wall and floor tile with epoxy grout as Laticrete Latapoxy SP-100, meeting ANSI A118.3, or approved alternate.

## 2.4 GROUT SEALER

- A. Water-based grout sealer, "Ultracare" manufactured by Mapei, (800)426-2734, Aqua Mix Grout Sealer manufactured by Custom Building Products, 800-272-8786, or approved alternate.

## PART 3 EXECUTION

### 3.1 INSPECTION:

- A. Examine the areas and conditions under which work of this section will be installed. Correct conditions detrimental to the proper and timely completion of the work.
- B. Calcium Chloride Moisture and pH Testing is required to be performed to the floor prior to tile installation. Perform test following industry standards. Architect to be notified of results as soon as results are ready.
- C. Do not begin work until surfaces scheduled to receive tile are acceptable. Surfaces shall be true with maximum variation not exceeding 1/8" in eight feet.
- D. Coordinate wall tile layout with ceiling installer to assure there will be no gaps between finished ceiling and wall tile.

### 3.2 INSTALLATION:

- A. General:
  - 1. Thoroughly mix all materials and install mortar, tile and grout as per the manufacturer's written instructions.
  - 2. All tile shall be set, grouted and cleaned in accordance with Tile Council of North America Specifications for Installation of Ceramic Tile for adhesive and grout specified and ANSI A108.1 A-C, A108.4-.13, A118.1-.10 and A136.1 (current addition).
  - 3. At stud walls, thin-set wall tile will be installed over cement board. Refer to Section 09 29 00.
  - 4. At CMU walls, thin-set wall tile will be installed to cement board, attached to CMU to provide smooth, uniform substrate for flush tile installation.
- B. Tile shall be neatly cut for proper fitting around all fixtures, pipe, accessories, etc. Rub cut edges with an abrasive stone to bring edge of glaze slightly back from body of tile. Where pipes pass through tile occurring on walls thoroughly caulk with sealant to completely seal around opening. Sealant shall be clear or match color of tile.
- C. Floor levelness uniformity at wall perimeter where floor tile is to be installed shall be verified prior to floor and wall tile being installed. Where floor is not uniform at perimeter walls, install floor leveling product compatible with tile and concrete so that perimeter is uniform about the perimeter of the room or area.

- D. When grout has thoroughly cured, apply minimum 2 coats grout sealer per manufacturer's instructions. Clean sealer from tile.

### 3.3 CLEANING AND PROTECTION:

- A. All work shall be thoroughly cleaned when completed.
- B. Contractor shall protect the work of other trades and shall be held responsible for any damage thereto.
- C. Protect tile surfaces for a minimum of 48 hours until tile is firmly set.
- D. Seal grout with clear approved sealer.

END OF SECTION



## SECTION 09 51 00

### ACOUSTICAL TILE CEILINGS

#### PART 1 GENERAL

##### 1.1 DESCRIPTION

- A. Furnish labor, materials, tools, equipment, scaffolding devices and incidentals necessary or required to install all acoustical tile ceilings and suspension system where shown or scheduled on the drawings.

##### 1.2 RELATED WORK

- A. Gypsum Wallboard: Section 09 29 00
- B. Air Distribution Systems: Division 23
- C. Lighting: Division 26

##### 1.3 REFERENCES:

- A. ASTM E1264 – Classification For Acoustic Ceilings
- B. ASTM E84 – Surface Burning Characteristics
- C. ASTM C367 – Strength Properties of Prefabricated Architectural Acoustical Tile or Lay-In Ceiling Panels
- D. ASTM C423 – Sound Absorption
- E. ASTM C636 – Standard Practice for Installation of Metal Suspensions Systems for Acoustical Tile and Lay-In Panels
- F. ASTM E1414 – Sound Attenuation
- G. 2010 Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources. Using Environmental Chambers – Version 1.1 – California
- H. ASTM C518-10 – Thermal Transmission Properties

##### 1.4 SUBMITTALS:

- A. Comply with Requirements of Section 01 33 00.
- B. Submit through Contractor to Architect:

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## 1.5 SAMPLES

- A. Submit one 6 inch x 6 inch piece of each type of acoustical tile to Architect for approval.
- B. Label tile with manufacturer's name, light reflection and noise reduction coefficient, flame spread rating and locations to be installed.
- C. Submit a sample of adequate size to show all component parts of the suspension assembly, including perimeter angles. .

## 1.6 ACOUSTICAL PERFORMANCE

- A. Acoustical ceiling tiles in academic and office areas to have a minimum noise reduction coefficient (NRC) rating of 0.55 and a minimum ceiling attenuation class (CAC) rating of 35.

## 1.7 GUARANTEE

- A. Acoustical ceiling boards shall have a manufacturer's limited system performance warranty against warping, shrinking or sagging, for minimum Thirty (30) years from date of final acceptance of the building. Grid system to be carry a manufacturer's Thirty (30) year guarantee.
- B. All work under this section shall be guaranteed free from defects in materials and workmanship for a period of one (1) year from date of final acceptance of the building, except where longer periods of time are specified.
- C. If during the material guarantee period, shrinkage, buckling or warping of acoustical ceiling occurs, tighten all joints, replace defective acoustical boards as required to maintain tight, neat ceiling.

## PART 2 PRODUCTS

### 2.1 MATERIAL

- A. Acoustical Tile Ceiling

#### **AC-1**

Acoustical tile ceilings as called for on plans to be exposed grid system, 24" x 24" x 5/8" non-combustible, mineral fiber, white ceiling board with factory applied white vinyl washable latex paint. USG Radar ClimaPlus, non-directional pattern, Armstrong Fissured HumiGuard Plus, or approved alternate, Class 'A', flame spread of 25. NRC rating: 0.55 CAC rating: 35. Panels contain a broad spectrum antimicrobial additive on the face and back of the panel that provides resistance against the growth of mold and mildew.

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- B. All suspended ceilings systems shall be grid system as manufactured by USG-Donn DX-24, Armstrong or approved equal manufacturer. Provide Donn ZXLA or approved equal for areas where vinyl covered gypsum board lay-in panels are called for. Components shall be formed from cold rolled steel, electrozinc coated and prepainted white. Main tee shall be double web design, .020 gauge, 1 1/2" in height. Wall angle shall be hemmed edge .024 gauge for galvanized grids. Equals: Chicago Metallic 200 series, Prelude 15/16" exposed tee system by Armstrong World Industries, Inc, or approved alternate.
- C. Fire rated ceiling assemblies shall be as called out above except system shall be equivalent to DXL system by USG, Interiors. System shall meet requirements of U.L. Laboratories.
- D. Provide hold down clips on all fire rated ceilings, vestibules where ceiling tile is installed, and on other areas where called for.
- E. In remodeled areas where existing grid is modified, use matching grid sections salvaged from demolition operations. Any new grid sections used in remodeled areas shall match existing.
- F. Drywall Suspension System: Suspended gypsum board ceilings are to DGL or DGLW drywall suspension system by USG Interiors. Components shall be manufacturer's standard components and installed in strict accordance with manufacturer's specifications.

## PART 3 EXECUTION

### 3.1 HANDLING OF MATERIALS

- A. Deliver materials to job in manufacturer's original containers, properly store and protect before, during and after installation. Damaged or defective materials shall be removed and replaced.

### 3.2 EXAMINATION OF EXISTING CONDITIONS

- A. Contractor shall be responsible for examination and acceptance of all surfaces and conditions affecting installation of suspension system and acoustical ceilings. Unsatisfactory conditions shall be corrected before proceeding with the work.
- B. Start no work until glazing is complete, exterior openings closed in, cement work, plastering or other wet work is completed and dried out. **HVAC SYSTEM MUST BE IN PLACE AND PROPERLY OPERATING BEFORE ANY CEILING TILE IS INSTALLED**
- C. Uniform temperature of 60 degrees F. minimum shall be maintained before, during and after acoustical material installation. Humidity level shall not be any more that what is required by manufacturer's instructions for installation.

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### 3.3 INSTALLATION OF SUSPENDED SYSTEMS

- A. Exposed grid suspension system:
  - 1. Wall molding shall be attached to all perimeter walls in accordance with manufacturer's recommendations.
  - 2. Main runners shall be attached to structure with No. 12 gauge hanger wires spaced not more than 4'-0" on center in one direction and 4'-0" on center in the other.
  - 3. Suspended drywall tees or framing shall be attached to structure with No. 12 gauge hanger wires spaced not more than 2'-0" on center in one direction and 2'-0" on center in the other.
  - 4. Cross tees shall be installed at 24" on center and mechanically fastened to main runners.
  - 5. The suspension system shall be installed to permit border units of the greatest possible size, but no less than 4" wide.
  - 6. All members shall be aligned for true, level surface and straight lines.

### 3.4 INSTALLATION OF ACOUSTICAL TILE CEILINGS

- A. Install units to sub-surfaces from set out points and to pattern shown. Verify location of work of other trades so their items occur within a whole unit or at joints as shown. Make cutouts for recessed items provided by other trades.
- B. Provide additional hangers at two adjacent corners of 2'x 4' light fixtures. Provide two at each strip fixture or incandescent fixture.
- C. Install units in place, fitting snugly. Provide spacers or hold-down clips where required and within 12' of exterior doors.
- D. Paint all rivets exposed to view to match suspension system finish. After installation, clean any soiled surfaces. Replace any damaged units.
- E. **Coordination with Ceramic Wall Tile:** Ceiling installer shall coordinate with ceramic tile installer to assure when wall tile extends to finished ceiling, there is no gap between tile and ceiling.
- F. **EXTRA STOCK:** At project completion, provide one additional box of each type of acoustical unit specified, for maintenance use by the owner. These tiles are not to be used to replace tiles damaged as a result of failure of other items under warranty (i.e. roofing systems, HVAC systems, etc.)
- G. **SALVAGED STOCK:** During demolition, use care to salvage existing ceiling tile. Store in area as directed by Owner.

### 3.5 CLEANING

- A. Following installation, clean soiled and discolored surfaces of units.

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- B. Remove and replace units which are damaged or improperly installed. Do not use owner's extra stock for replacing damaged ceiling tiles damaged during construction and damage resulting from failed building components or assemblies during the warranty period.

END OF SECTION

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## SECTION 09 65 13

### RUBBER BASE

#### PART 1 PRODUCTS

##### 1.1 SUMMARY:

- A. Section includes:
  - 1. Resilient Base

##### 1.2 RELATED SECTIONS:

- A. Section 06 41 16 – Cabinet Work & Shelving

##### 1.3 SUBMITTALS:

- A. Comply with Section 01 33 00.
- B. Submit through Contractor to Architect:
  - 1. Samples: Provide properly identified, actual samples of each material for approval and color selection prior to installation.
  - 2. Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

##### 1.4 QUALITY ASSURANCE:

- A. Regulatory Requirements: Conform to applicable code for flame/fuel/smoke rating requirements in accordance with ASTM E84.

##### 1.5 ENVIRONMENTAL REQUIREMENTS:

- A. Store materials for three days prior to installation in area of installation to achieve temperature stability.
- B. Maintain ambient temperature required by adhesive manufacturer three days prior to, during and 24 hours after installation of materials.

##### 1.6 WARRANTY:

- A. Provide manufacturer's one year warranty for material and Installer's one-year warranty.

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## PART 2 PRODUCTS

### 2.1 MATERIAL

#### A. Coved Rubber Base

1. Tarkett "Traditional Duracove Thermoplastic Rubber 1/8" coved wall base, Approved Alternate
2. ASTM E84/NFPA 255, Type TP or better, group 1 (solid); 4" high, 1/8" thickness; class C fire resistance, with matching pre-molded corner units; top-set coved base; color as selected from 115 color options by Architect. Pre-molded corner units to match exactly, rubber base color selected.
3. Provide base material in continuous rolls. **"Preformed" or "Field-Made" outside corners will not be allowed. Factory made Pre-molded outside corner units must be used.**
4. Adhesive: Porous surfaces: Tarkett #960 Cove Base Adhesive; Non-porous surfaces: Tarkett #946 Premium Contact Adhesive. Provide adhesives for approved alternate products as approved by manufacturer for each substrate application.

- B. Substitutions: Alternate products may be submitted for Architect's review and approval, but must comply with Section 01 60 00.

## PART 3 EXECUTION

### 3.1 EXAMINATION:

- A. Beginning of installation means acceptance of existing substrate and site conditions.

### 3.2 PREPARATION:

- A. Cleaning: Immediately prior to installation of the work of this section, vacuum clean substrate. Thoroughly clean substrate and remove all wax, oil, grease, paint, varnish hardeners, and other items which would adversely affect the bond of the adhesive.
- B. Remove edges and bumps.

### 3.3 INSTALLATION

#### A. BASE MATERIAL:

1. Areas to receive base will be clean, fully enclosed, weather-tight and temperature maintained at 65 degrees F for a minimum of 24 hours prior to and after installation. This also includes adhesives, which will be conditioned in same manner.
2. Coiled wall base will be uncoiled and laid out flat for at least 24 hours at 65 degrees.
3. Installer to verify substrate rubber base is to be adhered to and coordinate with other trades. Do not install epoxy paint where rubber base is to be installed.
4. Fit joints tight and vertical. Maintain minimum measurement of 18 inches between joints. Install continuous rolls with as few joints as possible. Use pre-molded corner units.

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5. Install base on solid backing. Bond tight to wall and floor surfaces.
6. Apply adhesive with 1/8" square notched trowel to cover 80% of the back surface. Hold adhesive down 1/4" from top of base.
7. Scribe to fit door frames and other interruptions.
8. Install pre-molded corner units on all outside corners before installing wall base. Do not extend continuous base around outside corners unless approved by Architect.
9. Base will be mitered at all inside corners.
10. Pieces of base less than 8" not allowed.
11. Install at toe space at base of all cabinets unless otherwise shown.

#### 3.4 CLEANING AND FINISHING:

- A. Allow adhesive to dry prior to mopping. Follow base manufacturer's instruction for drying time.
- B. Remove excess adhesive from base, and wall surfaces without damage.

END OF SECTION

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## SECTION 09 68 00

### CARPETING

#### PART 1 GENERAL

##### 1.1 DESCRIPTION:

- A. Provide all carpeting and accessories complete, in place, as shown on the drawings, specified herein, and needed for a proper and complete installation.

##### 1.2 RELATED SECTIONS

- A. Section 03 30 00 - Cast-In Place Concrete: Concrete slab moisture mitigation

##### 1.3 QUALITY ASSURANCE:

- A. Qualifications of manufacturer: Products used in the work of this section shall be produced by manufacturers regularly engaged in manufacture of similar items and with a history of successful production.
- B. Qualifications of installers: Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.
- C. Subcontractor / supplier providing work under this section will install work specified in this section with their company's own installers, employed by the company.  
**Subcontracting of installation will not be allowed unless approved by Architect prior to bid.**

##### 1.4 REFERENCES

- A. ASTM D2859 - Standard Test Method for Flammability of Finished Textile Floor Covering Materials.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- C. CRI 104 - Standard for Installation of Commercial Textile Floor-covering Materials; Carpet and Rug Institute.

##### 1.5 SUBMITTALS:

- A. General: Comply with the provisions of Section 01 33 00.

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- B. Product data: As soon as possible after award of the Contract, submit:
1. Complete materials list of all items proposed to be furnished and installed under this section.
  2. Manufacturer's specifications and other data required to demonstrate compliance with specified requirements.
  3. Shop drawings showing location of all seams and location and types of all carpet material and accessories.
  4. Samples of the following carpet products and of exposed edge accessories available from the proposed manufacturer within the specified allowance qualities.
  5. Manufacturer's recommended installation procedures.
- C. The manufacturer's recommended installation procedures, will become the basis for inspection and accepting or rejecting actual installation procedures used on the work.
1. Dealers/Installers must follow manufacturer's procedures for installation, using the recommended glues, seam sealers, and floor sealers (if needed).

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS:

#### A. CPT 1

1. Manufacturer/Product: J&J Flooring
2. Product Number: "Schematic: 7091
3. Color: 2109 datum
4. Backing: Nexus Modular
5. Dye Method: Solution Dyed/yarn dyed
6. Yarn System: Encore Nylon with recycled content
7. Product Construction: Textured Patterned Loop
8. Face Weight: 24 oz./sy (minimum)
9. Pile Density: 6845 oz./sy<sup>3</sup> (minimum)
10. Gauge: 1/12
11. Installation Methods: Tile tabs, Ashlar
12. Soil/Stain Protection: ProTex Soil Release
13. Standard Size: 24"x24"
14. Warranties: Lifetime Fiber Performance for Wear, Lifetime for Tuft Bind Strength (edge ravel, yarn pulls, zippering), Lifetime Protection from Delamination Failure,

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Lifetime Fiber Performance for Static, Lifetime Dimensional Stability, Lifetime Colorfastness to Light and Atmospheric Contaminants, Lifetime Stain Removal

15. Traffic Classification - Severe

16. Testing Specifications - Flooring Radiant Panel: Class 1 (ASTM E 648)

17. Testing Specifications - Smoke Density: Less than 450 flaming (ASTM E 662)

18. Testing Specifications - Static Test: Less than 3 kv (AATCC-134)

19. Testing Specifications – Lightfastness: Less than 4.0 at 60 AFU'S (AATCC-16-E)

## 2.2 MATERIALS

- A. All materials shall be new.
- B. All carpet shall be of first quality, of American manufacture and permanently mothproofed by manufacturer. Carpet must also have static controlled capabilities.
- C. Colors to be selected from manufacturer's standard range.
- D. All modular carpet to have high performance reinforced vinyl composite closed cell polymer backing as a minimum requirement. Modular secondary backing for the useful life of the original installation against product failure from:
  - 1. Tuft Bind (edge ravel, yarn pulls, zippering)
  - 2. Delamination
  - 3. Moisture Penetration
  - 4. Dimensional Stability
- E. Edge Trim: Provide anodized metal edge and transition strips manufactured by Powerhold or approved alternate. "LVT125, LVT 130, LVT150, LVT160" where carpet transitions to VCT or LVT; "LVT160, LVT425, 406, 404, 405, 407" where carpet transitions to concrete or resin epoxy flooring. NOTE: Product number to be selected for specific thickness of flooring specified.
- F. Special Edge Trim: Carpeted Riser Nosing: Powerhold or Schluter anodized aluminum or approved alternate. Style as selected by Architect.

## 2.3. ADHESIVES:

- A. Modular Carpet: Provide self adhering or manufacturer-approved adhesive, recommended by carpet manufacturer, compatible with carpet specified and provided, for releasable installation.
- B. Provide letter with carpet submittal, stating that adhesive for each type of carpet provided is approved by manufacturer for substrate in which it is applied.

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## PART 3 EXECUTION

### 3.1 INSPECTION:

- A. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to the proper and timely completion of the work. Do not proceed until satisfactory conditions have been achieved.
- B. Calcium Chloride Moisture and ph Testing is required to be performed to the floor prior to carpet installation. Perform test following industry standards.
  - 1. Maximum acceptable moisture emission rate for concrete sub floors (unless carpet manufacturer requires more stringent rate):
    - a. Carpet – 3 lbs/1,000 sq. ft. per 24 hours or lessDo not proceed until satisfactory conditions have been achieved.

### 3.2 SURFACE PREPARATION:

- A. Cleaning: Immediately prior to installation of the work of this section, thoroughly clean all substrate and remove all wax, oil, grease, paint, varnish hardeners, and other items which would adversely affect the bond of the adhesive.
- B. Slabs must be thoroughly cured, and free of curing agents, hydrostatic pressure, excessive alkali as determined by manufacturer, and moisture.
- C. Smoothing: Make all substrate level and free from irregularities. Assure one constant floor height after carpet is installed, grinding high spots and filling in low spots as required.
- D. For areas where carpet is to be installed outdoors, surface must be kept dry for at least 96 hours prior to installation.

### 3.3 PRODUCT HANDLING:

- A. Protection: Use all means necessary to protect the materials of this section before, during and after installation and to protect the work and materials of all other trades.
- B. Replacement: In the event of damage, immediately make all repairs and replacements needed at no additional cost to the Owner.

### 3.4 INSTALLATION:

- A. General:
  - 1. Install carpeting and accessories in strict accordance with the manufacturer's recommendations. Installation Ashlar
  - 2. If installation is in an addition and carpet is to match existing, new carpet is to be installed in the same direction as the existing carpet.

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B. Seams:

1. Locate seams to the maximum practicable out of traffic.
2. Unless noted otherwise, locate carpet seams between rooms under bottom end of door where butting carpet of alike or different types, pattern, or color.
3. Fabricate seams by the compression method, using a butt joint, and properly bed and seal all carpet edges and seams. Do not stretch seams. Provide seam adhesive at all seams at least 6" wide.
4. Apply carpet adhesive as recommended by carpet manufacturer for the specified backing type. Lay carpet into adhesive as soon as possible and remove any trapped air bubbles. Do not use heavy roller. Use 35# to 70# linoleum roller. Be sure to roll width wise. Apply succeeding widths with firmly butted side joints to eliminate visible seams. Cross seams shall be held to absolute minimum. Apply Rubber Seam Adhesive to seams before they are butted together.

C. Cleaning up: In addition to the requirements of Section 01 77 00, thoroughly clean all carpet surfaces prior to final acceptance of the carpeted areas by the Owner.

3.5 PROTECTION:

- A. Provide a heavy non-staining paper or plastic walkway as required over carpeting in direction of foot traffic, maintaining intact until carpeted space is accepted by the Owner.

3.6 ATTIC STOCK:

- A. Provide one additional box of carpet tile of each color and type for attic stock.

END OF SECTION

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## SECTION 09 91 00

### PAINTING AND FINISHING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. The work to be completed under this heading includes all labor, materials, equipment, and services necessary and reasonably incidental for painting throughout the building, both exterior and interior, for all wood, metal, masonry, or other surfaces as specified, to make a thoroughly complete job in every respect.
- B. Term "exposed" used herein refers to surfaces exposed at exterior of building and surfaces visible within building unless specifically called out. Materials in pipe chases, pipe tunnels and concealed above finish ceiling shall not be considered "exposed".
- C. Items included but not limited to - Exposed concrete surfaces (as called for on the interior finish schedule. Exposed concrete masonry units, interior and exterior. Exposed ferrous metals at exterior and interior of building not specified to receive factory applied finish of baked-on enamel. Concealed ferrous metals, except for fasteners and electrical and mechanical items, shall have minimum of one coat of corrosion-resistant paint. Exposed aluminum: galvanized steel roof vents, exhaust fans, grilles and registers shall not be painted unless otherwise designated.
- D. Exposed insulated piping, ductwork and mechanical equipment shall be painted unless supplied from the factory with a finish coat in compliance with building decor and this specification.
- E. Exposed wood, hardboard and plywood surfaces unless otherwise designated shall be painted or stained. Walls requiring patching or showing defects shall be painted in their entirety.
- F. There shall be no painting of copper, prefinished aluminum, or other finished metal, except iron.
- G. **Refer to section 09 29 00 for gypsum board surface texturing.**

##### 1.2 SUBMITTALS

- A. Comply with requirements of Section 01 33 00.

##### 1.3 ENVIRONMENTAL REQUIREMENTS

- A. Follow manufacturer's recommendations for temperature range in which coatings may be applied.

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- B. Comply with National Volatile Organic Compound Emission Standards for Architectural coatings, Rule 40 CFR, Part 59, established by Environmental Protection Agency for VOC limits unless stricter local regulations are required.

#### 1.4 PAINTING AND FINISHING PRE-INSTALLATION MEETING

- A. Prior to any wall or ceiling preparation, Contractor will schedule a pre-installation meeting. Required attendance will be Contractor or CM, Architect, Painter and drywall finisher, and suspended ceiling installer Contractor to conduct meeting.
- B. Discussion items:
  - 1. Gypsum board texturing and mockups
  - 2. Paint application.
  - 3. Protection of floors and surrounding finished items and finishes.
  - 4. Progression of installation following application of finished coat of paint. (i.e. switch and receptacle covers, millwork light fixtures, etc.)
  - 5. Accent painting clarification.
  - 6. Finishing of hollow metal doors and frames. (spray finish, not brushed.)
  - 7. Transparent finishes for woodwork, wood doors, etc.
  - 8. Other discussion items

### PART 2 PRODUCTS

#### 2.1 MATERIALS

- A. All paint and stain shall be manufactured by Benjamin Moore, Pittsburg or Sherwin Williams as specified.
  - 1. Other manufacturers listed below are approved, but must meet or exceed specifications for each type of paint or stain as specified in this specification.
    - a. Glidden
    - b. Kelly-Moore
    - c. Kwal.
  - 2. Substitutions: Comply with Specification Section 01 60 00.
  - 3. All colors shall be as selected by the Architect if not called out on drawings or specifications.
- B. All paint materials shall be delivered to the job in original unbroken manufacturer's packages with the labels intact and be kept in a locked room to which the Architect shall have access at all times.
- C. All materials shall be the best of their respective kinds and thoroughly mixed in the proper proportions to secure the best results.

#### 2.2 SAMPLE PANELS

- A. After painters' materials have been approved and before any painting or finishing is done, submit panels as follows:

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1. Panels showing color and texture of finish coat.
  2. Panels showing clear finishes.
- B. Panels to show color: Composition board, 4 inch by 11 inch by 1/8 inch to show each color selected.
- C. Panel to show transparent finishes: Wood of same species and grain pattern as wood approved for use, 4 inch by 11 inch face by 1/4 inch thick minimum, and where both flat and edge grain will be exposed, 11 inches long by sufficient size (two by two inch minimum or actual wood member) to show complete finish. Panels shall show each type of finish specified.
- D. Attach labels to each panel stating where material is to be used, mfg. of finish material, and color or number of finish.

## 2.3 PAINTING AND FINISHING SCHEDULE

- A. **Paint Schedule provides for minimum two-coat application in addition to primer or filler coat.** Additional coat may be required for certain items to give complete coverage and uniform appearance. Omit primer for items shop primed.

## 2.4 INTERIOR FINISHING SCHEDULE:

### A. Ferrous Metals:

- |   |  |
|---|--|
| 1st Coat:                                 | Benjamin Moore HP Acrylic Metal Primer HP1100<br>Sherwin Williams B66W00310 – Pro Industrial Pro-Cryl Universal Acrylic Primer   |
| 2 <sup>nd</sup> and 3 <sup>rd</sup> Coat: | PPG/Pittsburgh Pitt-Tech Plus DTM Primer/Finish 4020-1000<br>Benjamin Moore Command Waterborne Acrylic Urethane Satin V392<br>Sherwin Williams B53W01150 – Pro Industrial Waterbased Alkyd Urethane Enamel Semi-Gloss<br>PPG/Pittsburg HPC Rust Preventative Alkyd 4306-0110 |

### B. Gypsum Board & Plaster: After application of approved texture.

- |   |   |
|---|---|
| 1st Coat:                               | Benjamin Moore 354 “Super Hide” ZERO VOC Interior Latex Primer<br>Sherwin Williams B28WJ0901 – Wasatch Interior Latex Hi Hide Primer<br>PPG/Pittsburg “Speedhide” 6-2 Interior Latex Sealer               |
| 2 <sup>nd</sup> & 3 <sup>rd</sup> Coat: | Benjamin Moore 537 Ultra Spec 500 Interior Low Sheen Finish<br>Sherwin Williams B20W02651 - ProMar® 200 Zero VOC Interior Latex Egg-Shel<br>PPG/Pittsburg “Speedhide” Zero Interior Latex Eggshell 6-5310 |

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C. Wood (Painted):

- 1st Coat: Benjamin Moore INSL-X Prime All AP1000 Multi Surface Latex Primer Sealer  
Sherwin Williams B79W00450 – Multi-Purpose Waterbased Acrylic-Alkyd Primer  
PPG/Pittsburg Seal Grip Primeline Fast Dry Latex Undercoater 17-9517
- 2nd & 3rd Coat: Benjamin Moore Command Waterborne Acrylic Urethane Satin V3921X  
Sherwin Williams B53W01151- Pro Industrial Waterbased Alkyd Urethane Enamel Semi-Gloss  
PPG/Pittsburg HPC Rust Preventative Alkyd 4306-0110

D. Existing Wood Doors (Stained):

- 1st Coat: Sherwin Williams S64T00050-Sher-Wood® BAC Wiping Stain  
Old Masters Oil-Based Wood Wiping Stain
1. Fill wood with natural paste wood filler tinted with oil stain before final finish.
  2. Match existing stain color or Architect to select stain color.
- 2<sup>nd</sup> 3<sup>rd</sup> & 4<sup>th</sup> Coats: Benjamin Moore Stays Clear® Acrylic Polyurethane Low Lustre W423  
Sherwin Williams A68F00090 – Wood Classics® Waterborne Polyurethane Varnish Satin
1. Top, bottom, and edges of all doors shall be finished as above.

E. Concrete Unit Masonry/Concrete (other than epoxy coating):

- 1st Coat: Benjamin Moore 571 - Ultra Spec Masonry High-Build Block Filler  
Sherwin Williams B25W00025 - PrepRite® Block Filler  
PPG/Pittsburg “Speedhide” Interior/Exterior Masonry HI Fill Latex Block Filler 6-15XI
- 2<sup>nd</sup> & 3<sup>rd</sup> Coat: Benjamin Moore 537 “Ultra Spec 500” Interior Zero VOC Low Sheen Finish  
Sherwin Williams B20W02651 - ProMar® 200 Zero VOC Interior Latex Eg-Shel  
PPG/Pittsburg “Speedhide” Zero Interior Latex Eggshell 6-5310
1. 4th Coat: Will be required on accent colors for adequate coverage, same type as 3<sup>rd</sup> coat.
  2. Back roll both filler and paint coats to ensure good coverage.

F. Epoxy Coatings for CMU and Concrete:

- 1st Coat: Benjamin Moore 571 - Ultra Spec Masonry High-Build Block Filler  
Sherwin Williams B25W00025 - PrepRite® Block Filler  
PPG/Pittsburg “Speedhide” Interior/Exterior Masonry HI Fill Latex Block Filler 6-15XI
- 2<sup>nd</sup> & 3<sup>rd</sup> Coat Benjamin Moore HP3410/ HP3420 HP Pre-Catalyzed Waterborne Epoxy Semi-Gloss/ Eggshell  
Sherwin Williams K45W00151 – Pro Industrial PreCatalyzed Waterbased Epoxy Eg-Shel

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PPG/Pittsburg "Pitt-Glaze" WB1 Pre-Catalyzed Waterborne Acrylic  
Epoxy 16-510, Semi-gloss Finish

Acceptable

Alternate: Benjamin Moore Ultra Spec "Scuff-X" Satin N486, Semi-gloss N487.

1. Finish coating shall have a vitreous-hard, tile-like surface with high resistance to impact, abrasion, stain chemical and acid corrosion and with a flame spread rating of not more than 15 when tested in accordance with ASTM Standard Specification E-84-61. Application on all surfaces shall be in solid color to be selected by the Architect or as listed on drawings or specifications.

G. Epoxy Coatings for Gypsum Board:

1st Coat: Benjamin Moore 354 "Super Hide" Zero VOC Interior Latex Primer  
Sherwin Williams B28WJ0901 – Wasatch Interior Latex Hi Hide Primer

2<sup>nd</sup> & 3<sup>rd</sup> Coat PPG/Pittsburg "Speedhide" 6-2 Interior Latex Sealer  
Benjamin Moore HP3410/ HP3420 HP Pre-Catalyzed Waterborne Epoxy Semi-Gloss/ Eggshell  
Sherwin Williams K45W00151 – Pro Industrial PreCatalyzed Waterbased Epoxy Eg-Shel  
PPG/Pittsburg "Pitt-Glaze" WB1 Pre-Catalyzed Waterborne Acrylic Epoxy 16-510, Semi-gloss Finish

Acceptable

Alternate: Benjamin Moore Ultra Spec "Scuff-X" Satin N486, Semi-gloss N487.

1. Finish coating shall have a vitreous-hard, tile-like surface with high resistance to impact, abrasion, stain chemical and acid corrosion and with a flame spread rating of not more than 15 when tested in accordance with ASTM Standard Specification E-84-61. Application on all surfaces shall be in solid color to be selected by the Architect or as listed on drawings or specifications.

H. Concrete Floors (Sealer)

1. Clear Sealer

a. Two coats –MasterKure CC 250SB by BASF, semi-gloss, or approved alternate.

PART 3 EXECUTION

3.1 MATERIAL AND SPACE CONDITIONS

- A. Do not apply to wet or damp surfaces. Wait a minimum of 30 days or more as required by paint manufacturer before applying to new concrete or masonry. Follow manufacturer's procedures to apply appropriate coatings prior to 30 days to other substrate surfaces. Painter is required to test new concrete or masonry for moisture content prior to beginning of painting with a certified digital PH testing meter approved by Architect. If moisture content is above manufacturer's minimum, surface must be allowed to dry to within levels required by paint manufacturer.

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- B. Interior of building must be dried in prior to painter primer application. Do not begin painting of surface when temperature is at or below or temperature is predicted to drop below that required by paint manufacturer before required paint drying period.

### 3.2 SURFACE PREPARATION

- A. General: Temporarily remove items interfering with surface to be painted for complete painting of such items and adjacent areas.
  - 1. See other sections of the specifications for requirements for surface conditions and prime coat.
  - 2. Surfaces to be finished shall be dry, clean, smooth and prepared as specified.
  - 3. Materials and methods used for cleaning shall be compatible with the substrate and specified finish. Remove any residue remaining from cleaning agents used.
  - 4. Method of surface preparation is optional provided results of finish painting produce solid even color and texture specified.
- B. Wood: Sand to a smooth even surface and then dust off.
  - 1. Where transparent finish is specified, finish sanding shall be with 220 grit sandpaper. Wipe surface with a tack rag prior to applying finish.
  - 2. Surface to be painted with an opaque finish shall have all knots, sap and pitch streaks coated with knot sealer before applying any coat of paint. Apply two coats of knot sealer over large knots.
  - 3. Surfaces showing raised grain shall be sanded smooth between each coat.
  - 4. After application of prime or first coat of stain, fill all cracks, nail and screw holes, depressions and similar defects with patching compound. Sand to make smooth and flush with surrounding surface.
  - 5. Before applying finish coat, reapply patching compound if required, and lightly sand surface to remove surface blemishes.
- C. Steel and Iron:
  - 1. Remove oil, grease, soil, drawing and cutting compounds, flux and other detrimental foreign matter by use of solvents, emulsions, cleaning compounds, or by steam cleaning.
  - 2. Verify that all factory or field welds where exposed have been grinded to achieve smooth consistent surface and that primer has been applied on bare steel. Apply appropriate filler material where voids occur at welds and finish to achieve smooth consistent surface.
  - 3. Remove loose mill scale, rust, and paint, by hand or power tool cleaning, except where high temperature aluminum paint is used, the surface shall be prepared in accordance with the manufacturer's instructions.
  - 4. Fill all dents, holes and similar voids and depressions in flat exposed surfaces of hollow steel doors and frames, access panels, roll-up steel doors and similar items specified to have semi-gloss or gloss finish with patching compound. Finish flush with adjacent surfaces.
  - 5. Spot prime all abraded and damaged areas in shop prime coat which expose the bare metal, with same type of paint used for prime coat. Feather edge of spot prime as required to produce smooth finish coat. Spot prime all abraded and damaged areas

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which exposed the bare metal of factory finished items with paint as recommended by the manufacturer.

- D. Zinc-coated (Galvanized, Metal, Terne-Plate, Zinc, Lead, Aluminum, Copper and Copper Alloys): Prep galvanized surfaces specified to be painted per paint manufacturer's instructions. Surfaces specified to be painted shall be cleaned of all grease, oil and other deterrents to paint adhesion, with toluene, xylene or similar solvents.
  - 1. Spot prime all abraded and damaged areas of zinc-coating which expose the bare metal, using zinc rich paint on hot-dip zinc-coated items and zinc dust primer on all others.
  - 2. Spot prime, with red lead prime, all abraded and damaged areas of terne-plate which exposed the base metal.
- E. Masonry, Concrete, Cement Plaster and Stucco: Remove all dust, dirt, oil, grease efflorescence, form release agents, laitance, and other deterrents to paint adhesion.
  - 1. Use emulsion type cleaning agents to remove oil, grease, paint and similar products. The use of solvents, acid, or steam is not permitted.
  - 2. Remove all loose mortar in masonry work.
  - 3. Replace mortar and fill all open joints, holes, cracks and depressions with patching compound, finished flush with adjacent surface, with texture to match texture of adjacent surface.
  - 4. Concrete floors to be stained or sealed shall be etched and prepped per manufacturer's instructions. Allow required time to dry between applications.
  - 5. Concrete shall have all broken and spalled edged repaired with patching compound to match adjacent surfaces. Remove projections to level of adjacent surface by grinding or similar methods.
- F. Gypsum Plaster and Drywall: Remove efflorescence, loose and chalking plaster. Remove dust, dirt, and other deterrents to paint adhesion.
  - 1. Fill holes, cracks, and other depressions with patching compound, finished flush with adjacent surface, with texture to match texture of adjacent surface.

### 3.3 APPLICATIONS

- A. Start of surface preparation or painting will be construed as acceptance of the surface as satisfactory for the application of materials.
- B. Unless otherwise specified, paint shall be applied in three coats, prime, body, and finish.
- C. Before application of body and finish coats, surfaces shall be prepped and primed, except as otherwise specified. For primers to be used for field application, see **PRIMERS** paragraph in this specification.
- D. Additional field applied prime coats over shop or factory applied prime coats are not required, except for exterior steel which shall have a field applied prime coat in addition to the shop prime coat.

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- E. Retouch damaged and abraded painted surfaces before applying succeeding coats.
- F. Apply each coat evenly and in full covering body.
- G. Not less than 48 hours shall elapse between application of succeeding coats except as allowed by the manufacturer's printed instructions, and approved by the Architect.
- H. Finish painted surfaces shall have solid even color, free from runs, lumps, brush marks, laps, or other defects.
- I. To prevent items from sticking in the shut position, operable items such as access doors and panels, window sashes rolling doors, and similar items shall not be painted when in the closed position.
- J. Painted or otherwise finished surfaces of wood doors, including top and bottom edges, which are cut for fitting or for other reasons shall be given two coats of primer.
- K. Surfaces of finishing woodwork, except shop fabricated or assembled millwork and surfaces specified to have varnish, stain or natural finish shall be given one coat of primer as soon as delivered to the site.
- L. Back prime and seal ends of exterior woodwork, and edges of exterior plywood specified to be finished. Primer shall be same kind of primer specified for exposed face surface.
- M. Prime rebates for stop and face glazing of wood, and for face glazing of steel.
- N. Paint is to be applied by brush, or roller on all surfaces except metal. **SPRAY PAINTING MUST BE USED ON METAL SURFACES AND IS SUBJECT TO THE FOLLOWING:**
  - 1. Spray painting will be allowed if occupied portion of the building completely sealed off and approved by the Architect.
  - 2. Painting materials specifically required by the manufacturer to be applied by spraying shall be so applied.
  - 3. In areas, where paint is applied by spray, all items specified in Article, Work Not To Be Painted, motors, controls, telephone, and electrical equipment, and similar items shall be masked, or enclosed with polyethylene, or similar air tight material with all edges and seams continuously sealed.

#### 3.4 PRIMERS:

- A. After surface preparation, apply prime coat to various materials as follows: **NOTE:** Prime coat is not required for acrylic emulsion and latex emulsion finish.
  - 1. Steel and iron: Red lead primer
  - 2. Zinc-Coated Steel and Iron: Zinc dust primer.
  - 3. Aluminum: Zinc chromate primer.
  - 4. Lead and Terne Metal: Red lead primer.
  - 5. Copper and Copper Alloys: Zinc chromate primer

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6. Exterior Wood: Oil base primer.
7. Interior Wood: (except for transparent finish: Enamel undercoat, thinned as recommended by the manufacturer.
8. Gypsum Plaster Block Filler: Pigmented sealer, except use latex emulsion for alkyd flat finish.
9. Cement plaster, Concrete, and Masonry: Latex emulsion except use two coats of latex primer when substrate has aged less than six months.
10. Drywall: Latex primer, except use pigmented sealer in shower, dressing and locker rooms.

### 3.5 INTERIOR FINISHES

- A. On properly prepared and primed surface, apply the following finish coats. Prime coat is not required on concrete for floor enamel finish.
  1. Metal Work: Apply two coats of specified paint on exposed surfaces, including surfaces of ferrous metal louvers and ferrous metal hardware, except as follows:
    - a. Two coats of high gloss sheen specified paint on specified surfaces, color as selected.
    - b. Omit body and finish coats on surfaces concealed after installation
    - c. **NOTE: All metal surfaces to receive paint shall be spray applied. No exceptions!**
  2. Plaster: One coat of latex sealer plus two coats of latex satin on exposed surfaces.
  3. Drywall: One coat of latex sealer plus two coats of specified paint on exposed surfaces.
  4. Masonry and Concrete Walls: One coat of specified paint over block filler on surfaces where scheduled.
    - a. Third coat will be required on surfaces where accent colors are scheduled for adequate coverage.
5. Dry-Fall Paint Application: Apply over pre-primed surfaces. If steel surfaces are not primed, apply compatible primer for metal surface for dry-fall paint.

### 3.6 SPECIAL APPLICATIONS

- A. Unless noted otherwise, all exposed piping, conduit, ductwork, etc., exposed on interior of rooms shall be painted, matching color of walls or ceiling item is attached or adjacent to.
- B. Epoxy Paint
  1. Application of epoxy coating under this heading shall be done by trained applicators who are experienced in the use of the specific materials to be applied. Coating shall be applied in such quantity as will result in a dry film thickness of minimum 4 to 6 mils in uniform solid color or colors as selected. Floors and other adjacent surfaces which are not to be coated shall be protected during application, and special coating applicator shall clean and repair any adjacent surfaces damaged by his work.
  2. Coordinate termination of epoxy paint with installation of rubber base. No epoxy paint is to be applied where rubber base is to be installed.

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### 3.7 TRANSPARENT FINISHES ON WOOD

#### A. General:

1. Open grained wood such as oak, walnut, ash and mahogany shall be filled with a paste wood filler, colored as required to achieve finish specified. Thin filler accordance with manufacturer's instructions as required for application. Remove excess filler, wipe as clean as possible, allow to dry and sand lightly with 220 grit sandpaper.
2. Stain shall be of type and color required to achieve finish specified. Stains may be used when transparent finishes are specified to change the color of sapwood to match heartwood, and to enhance or even the color of the wood as required to match the finish specified. Varnish or polyurethane type stains will not be allowed.
3. Sealers shall be polyurethane, same as used for top coats, thinned with thinner recommended by the manufacturer at the rate of about one part of thinner to four parts of polyurethane. Sealer may be omitted where pigmented, penetrating, or wiping stains containing resins are used.
4. Sealers and polyurethane shall be sanded between coats. Allow manufacturer's recommended drying time before sanding, but in no case less than 24 hours (36 hours in damp or muggy weather). Sanding shall be done using 220 grit sandpaper. Sand enough to scarify the surface to assure good adhesion of the subsequent coat to level roughly applied sealer and to knock off the "whiskers" of any raised grain as well as dust pinnacles. Sanding blocks shall be used for between coat sanding.
5. Finish application shall be done only in clean areas and in still air. Before finishing, the area shall be vacuumed and dusted. Immediately before applying finish, the surfaces shall be wiped down with a tack rag.

#### B. Stain Finish: Apply in successive coats as follows:

1. One coat of stain.
2. One coat of sealer.
3. Two coats of satin polyurethane finish.

#### C. Natural Finish: Apply in successive coats as follows:

1. One coat of sealer.
2. Two coats of satin polyurethane finish.

**Note:** Individual specification sections or notes on drawings may call for finishes or prefinished items different from what is specified in this section (i.e. factory finished; factory stained, etc.). Unless otherwise called for, abide by those finishes as noted or specified on drawings or specification sections.

### 3.8 REFINISHING

#### A. Existing interior work to be refinished shall include the following:

1. Interior:
  - a. Existing painted surfaces of rooms, areas and spaces in which alterations occur under this contract.
  - b. Existing surfaces of rooms, areas and spaces specified to be painted as selected.

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- c. All other rooms, areas and spaces noted on the drawings to be refinished.
  - 2. Exterior: Existing painted surfaces damaged, altered or disturbed as result of work performed under this contract and surfaces specified to be painted, color as selected.
  - B. Except as otherwise specified or noted on drawings, refinished rooms, areas and spaces shall be refinished as follows:
    - 1. Patched and damaged surfaces of walls shall receive prime, body and finish coats.
    - 2. Patched and damaged surfaces of ceilings, except prefabricated acoustical unit ceilings shall receive prime and finish coats.
    - 3. Undisturbed surfaces of patched and damaged walls and ceilings, except prefabricated acoustical unit ceilings shall receive body and finish coats.
    - 4. In corridors, paint refinished walls and ceilings to the nearest natural break (ie; corner, reveal, door frame, etc.)
    - 5. Painted windows (interior surfaces only), doors, door frames, convectors, railings, and all other previously painted items and trim shall receive body and finish coats.
  - C. In existing rooms and areas where new prefabricated acoustical units are required, clean any existing surfaces free of dust, dirt, grease, and other deterrents to adhesion.
  - D. In existing rooms and areas where alterations occur, clean existing stained and natural finished window, doors, door frames and trim; retouch abraded surfaces and then give entire surface one coat of varnish as required to match existing. After the varnish has fired, buff with fine (Grade 4/0) steel wool to eliminate any accumulated dust particles.
  - E. Existing exterior wood and metal work shall be painted one body coat and one finish coat as specified for similar new work.
  - F. Color and texture of paint, and color and texture of stain and varnish for clear finishes on wood shall match existing, unless otherwise selected.
- 3.9 WORKMANSHIP OF REFINISHED SURFACES:
- A. Rating work to be refinished shall have surfaces prepared and made smooth before refinishing.
  - B. Surfaces shall be clean and dry before refinishing.
  - C. Abraded, peeled and bare spots shall be touched-up before painting or refinishing.
  - D. Refinishing of existing surfaces shall include preparation of surfaces to receive new finishes including removal of any existing finishes that may preclude application of new finishes. Remove all paint spots from hardware, signs, fixtures, and other similar items not required to be finished.
  - E. Remove loose particles of dirt, dust, paint film, rust, scale, and similar deterrents to paint adhesion by scraping, brushing, sanding, vacuuming, or other suitable methods.



- F. Remove grease, soil, and other deterrents to paint adhesion with a cleaning compound, or solvent compatible with substrate and subsequent coats. The use of solvents, acid, or steam will not be permitted on concrete and masonry. Remove any traces of cleaning agents which will affect paint adhesion.
- F. Properly cut out loose or broken glazing compound on glazed doors, sash, etc., to sound material. Clean cut-outs and neatly re-putty with glazing compound.
- H. Holes, cracks, and other surface indentations shall be neatly filled with patching compound compatible with substrate and subsequent coats, appropriate for the surface texture required and finished to match adjacent surface texture.
- I. Knots, pitch streaks, etc., showing through old finish shall be coated with knot sealer before refinishing.
- J. Sand or dull glossy surfaces prior to painting. Sand existing paint to a feather edge so that transition between new and existing finish will not show in the finished work.
- K. Workmanship and material shall be equal to that specified for new work of similar character as required to match adjoining work.

### 3.10 SCAFFOLDS

- A. This Contractor shall provide all ladders, scaffolds, staging, etc., required for the proper execution of the work.

### 3.11 PROTECTION:

- A. Protect all work from paint droppings and spattering by use of masking, drop cloths, removal of items or by other approved methods.

### 3.12 EXTRA STOCK:

- A. Provide minimum one full gallon of each type and each color of paint specified and used on project. Each paint container to be properly labeled, identifying type and color.

### 3.13 CLEAN UP

- A. Upon completion, clean paint from all hardware, glass and other surfaces and items not required to be painted.
- B. Before final inspection, any work which has become damaged or discolored shall be touched-up or refinished in a manner to produce solid even color and finish texture, free from defects.

END OF SECTION

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## SECTION 10 00 00

### MISCELLANEOUS SPECIALTIES

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Furnish all items listed and specified below and where shown on drawings. Install per manufacturer's instructions.
- B. Section includes:
  - 1. Pass-Through Evidence Cabinets

##### 1.2 QUALITY ASSURANCE

- A. Qualifications of Manufacturer: Products used in the work of this Section shall be produced by manufacturers regularly engaged in manufacture of similar items and with a history of successful production acceptable to the Architect.

##### 1.3 SUBMITTALS

- A. Comply with requirements of Section 01 33 00.
- B. General: Submittals showing all details of script, fabrication, and installation.
- C. The manufacturer's recommended installation procedures, when approved by the Architect, will become the basis for inspecting and accepting or rejecting actual installation procedures used on the Work.

##### 1.4 PRODUCT HANDLING

- A. Protection: Use all means necessary to protect materials of this Section before, during and after installation and to protect installed work and materials of all other trades.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Pass-through Drawer:
  - 1. Acceptable Manufacturer: Shure Mfg. Corp., which is located at: 1901 W. Main St.; Washington, MO 63090; Toll Free Tel: 800-227-4873; Tel: 636-390-7176; Fax: 636-390-7171; Email: request info (rwakeman@shureusa.com); Web: <http://www.shuresafe.com> | <http://www.shureusa.com>

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2. Requests for alternate substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.
3. Model SPT150: Bullet Resistant Transaction drawer.
4. Dimensions:
  - Overall Size (W x D x H): 18 x 25 x 5 in (457 x 635 x 127 mm).
  - Frame Face (W x H): 21-3/8 x 8 in (543 x 203 mm).
  - Transfer Area (W x D x H): 13-3/4 x 20 x 4-1/8 in (349 x 508 x 105 mm).
  - Travel length: 11 in (279 mm).
  - Wall Opening (W x H): 19-5/8 x 6-1/4 in (498 x 159 mm).
  - Weight: 60 lbs (27.2 kg).
5. Provide with **UL Level 8** bullet resistant faceplate insert.
6. Examination and Preparation
  - If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.
  - Do not proceed with installation until substrates have been properly prepared and deviations from manufacturer's recommended tolerances are corrected. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
  - Commencement of installation constitutes acceptance of conditions.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Verify that area to receive product is ready for installation.
- B. Install in accordance with manufacturer's written instructions and recommendations as applicable to specified application.
- C. If required, provide training to owner.

### 3.2 CLEANING AND PROTECTION

- A. Protect installed product from damage during application and remainder of construction period, per manufacturer's written instructions.

END OF SECTION

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## SECTION 10 14 00

### IDENTIFYING DEVICES

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Provide all labor, materials, fabrications and coordination required to install complete, in place interior signage.

##### 1.2 QUALITY ASSURANCE

- A. Qualifications of Manufacturer: Products used in the work of this Section shall be produced by manufacturers regularly engaged in manufacture of similar items and with a history of successful production acceptable to the Architect.

##### 1.3 SUBMITTALS

- A. Comply with requirements of Section 01 33 00.
- B. Manufacturers must submit 3 references showing products for projects completed within the last 6 years.
- C. Submit manufacturer's technical data and installation for each type of sign required.
- D. Submit shop drawings listing sign size, letterform and letter heights.
- E. Submit one full size sample sign of type, style and color specified, including method of attachment. If approved, the sample will become part of the job.
- F. The manufacturer's recommended installation procedures, when approved by the Architect, will become the basis for inspecting and accepting or rejecting actual installation procedures used on the Work.

##### 1.4 SIGN TYPE DESCRIPTION

- A. Signage shall consist of room number and room function to meet the requirements of the Americans with Disabilities Act (ADA).

##### 1.5 PRODUCT HANDLING

- A. Protection: Use all means necessary to protect materials of this Section before, during and after installation and to protect installed work and materials of all other trades.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

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## 1.6 REFERENCES

- A. Comply with State of Arkansas Adopted ADA Accessible Guidelines in regard to accessible or handicapped features.

## PART 2 PRODUCTS

### 2.1 ROOM IDENTIFICATION:

- A. Provide products from Mohawk Sign Systems, Inc.® P.O. Box 966, Schenectady, NY 12301-0966. 518/ 370-3433 or FAX 518/ 370-3332, equivalent by Archway Graphic Designs, Little Rock, AR, Best Sign Systems, Montrose, CO, or approved alternate substitution.
- B. Substitutions: Other manufacturers must submit their signage products to the Architect 10 days prior to the bid date for approval to be considered for substitution.
- C. Colors: Architect to select colors from manufacturer's standard color selection.

### 2.2 GRAPHIC PROCESS

- A. All signs shall be manufactured using Graphic Process Series 200A - Sand Carved® using Format D.
  - 1. Tactile characters shall be raised the required 1/32" inches from sign face. Glue-on letters or etched backgrounds are not acceptable.
  - 2. All text shall be accompanied by Grade 2 braille with domed dots. Braille shall be separated 1/2" from the corresponding raised characters or symbols. Grade 2 braille translation to be provided by signage manufacturer.
  - 3. All letters, numbers and/or symbols shall contrast with their background, either light characters on a dark background or dark characters on a light background. Characters and background shall have a non-glare finish.
- B. Plaque material shall be Special Purpose SP125 decorative thermosetting high pressure laminate. Material to be 1/8" thick laminate with a melamine resin surface and a phenolic resin core which provides resistance to abrasion, stains, alcohol, solvents, boiling water, and heat. The material shall be NEMA rated and have flammability and smoke values that meet the standards for flammability of interior materials.
- C. Background color as selected by architect from manufacturer's actual color samples.
- D. Letterform shall be Gill Sans upper case letters and numbers
- E. Size of letters and numbers shall be as follows:
  - 1. Room numbers shall be 1 ".
  - 2. Lettering for room ID signs shall be 5/8" or as noted.
  - 3. Symbol size shall be 4".
  - 4. Standard Grade 2 braille shall be 1/2" below copy.
  - 5. Corners: 1/2" radius

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F. Copy position: As indicated on drawings.

## 2.3 SIGN DESIGN

A. Refer to drawings for sign types.

## PART 3 EXECUTION

### 3.1 INSPECTION

A. Examine the areas, conditions and surfaces where work of this Section will be performed. Correct conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

### 3.2 SURFACE PREPARATION

A. Cleaning: Immediately prior to installation of the work of this Section, thoroughly clean all substrata and remove all oil, grease, paint, varnish hardeners, and other items which would adversely affect the bond of adhesive.

B. Smoothing: Make all substrata level and free from irregularities.

### 3.3 INSTALLATION

A. Install all graphic materials and identifying devices in strict accordance with the approved shop drawings and the manufacturer's instructions.

B. Signs shall be mounted using vinyl tape and silastic adhesive. Mechanical for Exterior signage. Unless noted otherwise, all signs shall be mounted 60" from the floor to the top of the sign on the latch side. Center of sign is to be 9" from doorframe or room opening and edge of sign. Installer user assumes responsibility for suitable installation of the signs.

### 3.4 CLEANING UP

A. Thoroughly clean all graphics and identifying devices after installation and prior to final acceptance by the Owner. Use only those cleaning materials and methods recommended by the respective manufacturers.

### 3.5 PROTECTION

A. Provide any and all necessary protective measures or materials to insure that graphic materials and identifying devices are not damaged prior to acceptance by Owner. Replacement or repairs caused by such damage shall be corrected immediately at this Contractor's expense.

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### 3.6 COORDINATION

- A. Throughout construction of substrate surfaces, use all means necessary to ensure proper and adequate provision for concealed support devices, and for finished openings, to receive the work of this Section.

END OF SECTION

10 14 00-4

## SECTION 10 26 41

### BULLET RESISTANT FIBERGLASS COMPOSITE

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Section includes bullet resistant fiberglass panels.

##### 1.2 REFERENCES

- A. American Society for Testing and Materials:
  - 1. ASTM E119-98 Standard Test for One-Hour Fire-Rating of Building Construction and Materials
- B. International Organization for Standardization:
  - 1. ISO 9001:2015 Quality Management System
- C. Small Business Administration:
  - 1. SBA Small Business Size Standard D.
- D. Underwriters Laboratories:
  - 1. UL 752 Specifications and Ammunition, 11th Edition, Standard for Bullet Resisting Equipment published September 9, 2005, revised December 21, 2006, Level 1
- E. The United States Department of State:
  - 1. The International Traffic in Arms Regulations (ITAR) American Welding Society (AWS): AWS D1.1 - Structural Welding Code - Steel.

##### 1.3 SUBMITTALS

- A. Submit under provisions of Section 01 33 00 - Shop Drawings, Product Data & Samples.
- B. Product Data:
  - 1. Product Data: Include specifications, brochures, and samples.
  - 2. Design Data: Bullet resistance analysis design calculations for specific project conditions, certifying system conformance to specified performance requirements.
  - 3. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, color, and patterns.
  - 4. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.

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C. Certificates: Submit printed data to indicate compliance with following requirements.

1. UL LISTING Verification and UL752 Current Test Results as provided by Underwriters Laboratories.
  2. ASTM E119-98 One-Hour Fire Rating of Building Construction and Materials.
  3. Manufacturer's third-party certificate of registration with ISO 9001:2015.
  4. Manufacturer's U.S. Dept. of State ITAR Statement of Registration.
  5. Manufacturer's SBA Profile verifying small business status by the SBA.
- Closeout submittals: Warranty documents, issued and executed by manufacturer of systems, countersigned by Contractor.

#### 1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified with a minimum documented experience of five years.
- B. Installer Qualifications: Company specializing in installation of products specified with minimum three years documented experience.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's unopened, undamaged packaging, with manufacturer's labels intact.

#### 1.6 SEQUENCING

- A. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.

#### 1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

#### 1.8 WARRANTY

- A. Manufacturer's Standard Warranty: 2 years from date of manufacture.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

#### A. Acceptable Manufacturers:

1. ARMORCORE, 302 S. 27<sup>th</sup> Street, Waco, Texas 76710; Phone (866) 688-3088, <https://www.armorcore.com>
2. ARMORTEX ®, 5926 Corridor Pkwy., Schertz, Texas 78154; Phone: (210)-661-8306, (800)-880-8306, Fax: (210)-661-8308, <https://armortex.com>
3. Total Security Solutions, 935 Garden Ln.; Fowlerville, MI 48836; Phone: (866) 304-5070; Fax: (517) 223-0805; <https://tssbulletproof.com/>

#### B. Requests for substitutions will be considered in accordance with provisions of Section 01 25 00 - Substitutions and Product Options.

### 2.2 BULLET RESISTANT COMPOSITE PANELS

#### A. Composite Panels: Bullet Resistant Fiberglass Composite. FRP composite panel manufactured using multiple layers of starch-oil woven roving ballistic grade fiberglass cloth impregnated with a thermoset polyester resin and compressed into flat rigid sheets.

1. Composite panels shall be of the "non ricochet type" intended to permit the encapture and retention of an attacking projectile lessening the potential of a random injury or lateral penetration.
2. Material will meet ASTM E119 one-hour fire resistance when installed in a non- bearing steel stud wall with 5/8-inch fire code gypsum on the exterior and with 5/8- inch (16 mm) fire code gypsum over the FRP panel on the inside.
3. Panels conforming to UL 752 Rating level as follows:
  - a. UL Level 8.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until openings and installing surfaces have been properly prepared.
  1. Verify openings are in accordance with approved shop drawings.
  2. Verify that supports have been installed in accordance with the Drawings.
- B. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### 3.3 INSTALLATION

- A. Install products in accordance with approved submittals, manufacturer's instructions and requirements of UL 752.
  - 1. Install equipment plumb, level, rigid and in true alignment.
  - 2. Use proper anchoring devices. Exposed anchor holes shall be used for anchors.
  - 3. Install hardware as required for a complete installation.
  - 4. Where applicable, install fire-rated assemblies in accordance with NFPA 80.
  - 5. Adjust operating parts for proper operation, non-binding.
  - 6. Joints shall be reinforced by a back-up layer of bullet resistive material.
  - 7. Bullet resistance of the joint, as reinforced, shall be at least equal to that of the panel.
  - 8. Minimum width of reinforcing layer at joint shall be 4 inches (2 inches on each panel or a 2-inch minimum overlap).
- B. Installation Tolerances: Do not exceed the following installation tolerances:
  - 1. Squareness: Plus or minus 1/16 inch (1.6 mm) measured on a line, 90 degrees from one jamb, at the upper corner of the frame at the other jamb.
  - 2. Alignment: Plus or minus 1/16 inch (1.6 mm) measured on jambs on a horizontal line parallel to the plane of the wall.
  - 3. Twist: Plus or minus 1/16 inch (1.6 mm) measured at face corners of jambs on parallel lines perpendicular to the plane of the wall.
  - 4. Plumb: Plus or minus 1/16 inch (1.6 mm) measured on the jamb at the floor.

### 3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

## SECTION 10 28 13

### TOILET AND BATH ACCESSORIES

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. The work to be completed under this heading consists of furnishing all labor, materials, equipment and services necessary for and reasonably incidental to the furnishing and application of all miscellaneous items as shown and as specified.
- B. All items shall be delivered in sound condition, properly installed and shall be clean, undamaged, and in proper working order.

##### 1.2 SUBMITTALS

- A. Comply with requirements of Section 01 33 00.

##### 1.3 REFERENCES

- A. Comply with ADA Accessible Guidelines in regard to accessible or handicapped features.

#### PART 2 PRODUCTS

##### 2.1 OWNER FURNISHED TOILET ACCESSORIES:

- A. Owner will furnish soap dispensers, tissue dispensers, and paper towel dispensers. These items are to be installed by contractor.

##### 2.2 TOILET ACCESSORIES:

- A. Pre-manufactured Wall Mounted Mirrors: (One at each wall-hung lavatory.)
  - 1. Standard Stainless-Steel Mirrors:
    - a. Surface mounted, center over each lavatory, 304 stainless steel, satin finish frame with No. 1 quality 1/4" glass, mirror warranted against silver spoilage for 15yrs. Galvanized steel back, 18"x36". Secure to concealed wall hanger with theft-resistant mounting. Mounting height as scheduled on Drawings.
    - b. Acceptable Products:
      - Bobrick Washroom Equipment, Inc. - Model B-290-1836
      - Bradley Corporation, Model 780-1836
- B. Grab Bar-Toilet Rooms: (One set at each handicapped water closet.)
  - 1. 18 gage stainless steel; 1 1/2" diameter, safety grip surface; concealed mounting. One at each handicapped water closet.
    - a. Model No. B6806.99 x 42, B6806.99 x 36 & B6806.99 x 18 by Bobrick.
    - b. Model No. 8122-00142, 8122-00136 & 8122-00118 by Bradley.

- c. Or approved alternate.
- C. Soap Dispenser: (one for every two lavatories, minimum one, each toilet.)
  - 1. 304 stainless steel body and back with satin finish, 40 fluid oz capacity; unbreakable refill window; concealed wall fastening; hinged stainless steel filler.
  - 2. Acceptable Products:
    - Bobrick Washroom Equipment, Inc. - Model B-2112
    - Bradley Corporation, Model 6542
    - McKinney, A Unit of L.B. Foster Co., Model 304-H
- D. Sanitary Napkin Disposal:
  - 1. Min. 22 gauge, type 304 stainless steel, satin finish. Door to have full length piano hinge.
  - 2. Acceptable Product:
    - a. Bobrick Washroom Equipment, Inc., **Type 1:** Model B-254 (Surface mounted),
    - b. Bradley Corp., **Type 1:** Model 4722-15 (Surface mounted),
    - c. Approved alternate

### PART 3 EXECUTION

#### 3.1 FABRICATION:

- A. Stamped names or labels on exposed faces of toilet accessory units are not permitted. Wherever locks are required for particular type of accessory, provide same keying throughout project. Furnish two keys for each lock, properly identified.
- B. Surface Mounted Accessories: Fabricate units with tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous piano hinge or minimum of two 1 1/2" pin hinges of same metal as unit cabinet. Provide concealed anchorage wherever possible.

#### 3.2 INSTALLATION:

- A. Install toilet accessory units in accordance with manufacturer's instructions, using fasteners appropriate to substrate and recommended by manufacturer of unit.
- B. Install units at location and heights as shown on drawings. Install as to comply with all national, state, and local codes and regulations. Units shall be plumb and level, firmly anchored.
- C. If mirrors are installed on ceramic tile, coordinate tile pattern and layout to accommodate mirrors. Mirror to be installed on single plane.
- D. Molly-type anchors are not acceptable for securing accessories to walls or partitions. Secure to gypsum board partitions with screws anchored in wood blocking. Anchor accessories to masonry walls with screws set in epoxy.
- E. Where mounting grab bars to existing gypsum board walls, anchor with Wingit model 251-4 wall anchor, manufactured by Wingit Innovations, Inc. Install per manufacturer's instructions.

- F. Verify and coordinate location and installation of wood blocking concealed in gypsum board walls for attachment of wall-mounted toilet accessories.

### 3.3 ADJUSTING AND CLEANING:

- A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly.
- B. Clean and polish all exposed surfaces after removing protective coatings.

END OF SECTION

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## SECTION 22 01 00

### GENERAL PLUMBING PROVISIONS

#### PART 1 GENERAL

##### 1.1 WORK INCLUDED

- A. The work covered by Division 22 sections consist of furnishing all labor, equipment, appliances and material for the heating, air conditioning, piping and plumbing systems in strict accordance with Codes, Specifications and the applicable drawings and subject to the terms and conditions of the contract. Include all appurtenances necessary to the proper operation of the systems and equipment specified.
- B. General Contractor shall install all concrete pads and bases required for installing mechanical equipment. Mechanical Contractor is responsible for the exact sizes required, location of anchor bolts, etc.
- C. Some equipment may be furnished by other divisions. Mechanical Contractor is responsible to check the drawings and specifications for equipment that will be furnished by others. Furnish the supplies (hot and cold water cut-offs), traps, drains, controls, gas piping, backflow preventers, pressure reducing valves, etc., on all equipment furnished by other divisions.
- D. General Contractor shall furnish and install all ceiling access panels required to service mechanical equipment, valves and controls above gyp board or hidden spline ceilings.
- E. General Contractor shall provide all site drive, sidewalk and other surfaced areas saw cutting and repairs back to preexisting conditions for the required mechanical piping. Mechanical Contractor shall provide the trenching, bedding and backfill required for the pipe installation.

##### 1.2 RELATED SECTIONS

- A. The General Conditions and Division 1, General Requirements, as bound in the specification preamble, apply to all work under Division 22. Carefully note its contents in performance of the work.
- B. The Architectural, Mechanical, Electrical, and Structural plans and Specifications, including Information to Bidders and other pertinent documents issued by the Engineer are a part of this Specifications and the accompanying mechanical plans. Comply with them in every respect. Examine all the above carefully. Failure to comply does not relieve the Contractor of responsibility nor may it be used as a basis for additional compensation due to omission of architectural, electrical and structural

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details from the mechanical drawings.

- C. All electrical power wiring is specified under Division 26 of the Specifications. Mechanical Contractor shall furnish all motor starters required for the control and protection of all motors furnished for the Division 22.
- D. All concrete pads and bases required for installing mechanical equipment are specified in another section of the Specifications. Advise the General Contractor as to the exact sizes required, location of anchor bolts, etc.
- E. Paint all mechanical equipment piping, supports and other exposed material. Do not paint equipment supplied with painted finish, such as the main mechanical equipment unless damaged during handling and installation. In such cases, use touch-up paint of the same type and color as original paint. Conform to requirements in other sections of the Specifications and match wall finish to the room in which installed.

### 1.3 CODES, FEES AND LATERAL COSTS

- A. Comply with all applicable codes, specifications, local ordinances, industry standards, utility company regulations, and the applicable requirements of the following latest nationally accepted codes and standards:
  - 1. 2021 Fayetteville , Arkansas City Building Code.
  - 2. 2021 Arkansas State Mechanical Code.
  - 3. 2018 Arkansas State Plumbing Code.
  - 4. 2014 Arkansas Energy Code.
  - 5. IBC - International Building Code.
  - 6. IFC - International Fire Code; latest accepted edition.
  - 7. IGC - International Gas Code; latest accepted edition.
  - 8. IPC - International Plumbing Code; latest accepted edition.
  - 9. IMC - International Mechanical Code; latest accepted edition.
  - 10. IECC - International Energy Conservation Code; latest accepted edition.
  - 11. AMCA - Air Moving & Conditioning Association.
  - 12. ASA - American Standards Association.



13. ASHRAE - American Society of Heating, Refrigerating and Air Conditioning Engineers.
  14. ASME - American Society of Mechanical Engineers.
  15. ASTM - American Society of Testing Materials.
  16. AWWA - American Water Works Association.
  17. NBS - National Bureau of Standards.
  18. NEMA - National Electrical Manufacturers Association.
  19. NFPA - National Fire Protection Association.
  20. SMACNA - Sheet Metal & Air Conditioning Contractors' National Association.
  21. UL - Underwriters' Laboratories, Inc.
  22. AGA - American Gas Association.
  23. OSHA - Occupational Safety and Hazard Association.
  24. AABC - Associated Air Balance Councils.
  25. NEBB - National Environmental Balancing Bureau.
- B. Comply with State of Arkansas adopted ADA Accessible Guidelines in regard to accessible or handicapped features.
- C. In case of difference between building codes, Specifications, state Laws, local ordinances, industry standards and utility company regulations and the Contract Documents, the most stringent governs. Promptly notify the Engineer in writing of any such difference.
- D. Remove any work installed that does not comply with the requirements of the applicable building codes, state laws, local ordinances, industry standards, or utility company regulations, correct the deficiencies, and reinstall all work at no cost to the Owner.
- E. The mechanical drawings show the general arrangement of all piping, equipment and appurtenances. Follow as closely as actual building construction and the work of other trades will permit. Final layout will be governed by actual field conditions with all measurements verified at the site. Conform to the requirements shown on all of the drawings. General and structural drawings take precedence over mechanical drawings. Because of the small scale of the mechanical drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. Investigate the

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existing and finish conditions affecting the work and arrange the work accordingly, providing such fittings, valves and accessories as may be required to meet such conditions. Contractor shall verify that all equipment, ducts, pipes and all other components will fit in the space provided before fabrication or ordering.

- F. Obtain any and all required permits in connection with this work under the Contract and pay any and all fees in connection therewith. Arrange with the serving utility companies for the connections to all utilities and pay all charges for same including inspection fees and meters if required. Refundable deposits will be paid by the Owner.
- G. Mechanical Contractor shall provide and install, where applicable, seismic restraints for all piping and duct systems per the latest accepted Building Code.

#### 1.4 GUARANTEE

- A. Furnish a written certificate guaranteeing all materials, equipment and labor furnished to be free of all defects for a period of one (1) year from and after the date of final acceptance of the work by the Owner and further guarantee to replace such work without charges if any defects appear within the stipulated guaranty period.

#### 1.5 SOIL CONDITIONS

- A. The Specifications and the drawings in no way imply the conditions of the soil to be encountered. When excavating may be required in execution of the work, this Contractor agrees that he has informed himself regarding conditions affecting the work.

#### 1.6 INSPECTION OF PREMISES

- A. Before submitting a bid, visit the site of the proposed job and determine the conditions relating to this work.

#### 1.7 UTILITIES, LOCATIONS AND ELEVATIONS

- A. Locations and elevations of the various utilities included within the scope of this work have been obtained from substantially reliable sources and are offered as a general guide only, without guarantee as to accuracy. Verify the location and elevation of all utilities and their relation to the work before entering into a contract.
- B. Identify outdoor underground lines with continuous strip of plastic utility marker tape at regular intervals (maximum of 10 feet) "Caution (state utility) pipe below". Install one foot directly above pipe before backfilling to grade.

## 1.8 EXISTING BUILDING AND EXISTING MECHANICAL EQUIPMENT

- A. Visit the existing building and become thoroughly acquainted with the existing mechanical systems and utilities in order to determine all of the work that will be necessary to carry out the intent of the plans and specifications.
- B. If it is necessary, in any way, to interfere with normal operations of the existing utilities in order to carry out the work, give notice and obtain written approval from the Owner before the work is started.
- C. The work involved in this project requires the Contractor to work inside of an existing building. Interruption of the regular routine of the building by the Contractor must be kept to a minimum.

## 1.9 EQUIPMENT NOT SPECIFIED UNDER DIVISION 22

- A. Equipment which requires plumbing and other mechanical connections may be specified in another division of this Specification. Under these conditions, provide necessary utilities including waste, water and natural gas.
- B. Rough-in work from approved shop drawings only.

## PART 2 PRODUCTS

### 2.1 EQUIPMENT AND MATERIALS

- A. Provide new materials bearing the manufacturer's name, trade name and the UL label in every case where a standard has been established for the particular material.  
Furnish the standard product of a manufacturer regularly engaged in the production of the required type of equipment. Provide the manufacturer's latest approved design.
- B. Deliver equipment and materials to the site and store in original containers, suitably sheltered from the elements, but readily accessible for inspection by the Engineer until installed. Store all items subject to moisture damage (such as controls) in dry, heated spaces.
- C. Provide equipment and materials of the same general type and of the same make throughout the work to provide uniform appearance, operation and maintenance.
- D. Tightly cover equipment and protect against dirt, water and chemical or mechanical injury and theft. At the completion of the work, clean fixtures, equipment and materials and polish thoroughly. Turn over to the Owner in a condition satisfactory to the Engineer. Repair damage or defects developing before acceptance of the work at no expense to the Owner.

- E. Insure that items to be furnished fit the space available. Make necessary field measurements to ascertain space requirements, including those for connections. Furnish and install such sizes and shapes of equipment that the final installation suits the true intent and meaning of the drawings and Specifications.
- F. Follow manufacturer's directions completely in the delivery, storage, protection and installation of all equipment and materials. Promptly notify the Engineer in writing of any conflicts between any requirements of the Contract Documents and the manufacturers' directions. Obtain the Engineer's written instruction before proceeding with the work. Replace any work that does not comply with the manufacturers' directions or such written instructions from the Engineer, at no cost to the Owner.
- G. Support all products by service organizations with adequate spare parts inventory and personnel located reasonably close to the site.
- H. Where multiple units of the same type or class of products are required, provide all units of the same manufacturer.

## 2.2 EQUIPMENT ACCESSORIES

- A. Furnish and install all equipment, accessories, connections and incidental items necessary to fully complete all work, ready for use, occupancy and operation by the Owner.
- B. Where equipment requiring different arrangement or connections from those shown is provided, install the equipment to operate properly and in harmony with the intent of the drawings and Specifications.
- C. Support, plumb, rigid and true to line, all work and equipment furnished. Study thoroughly all general, structural, electrical and mechanical drawings, shop drawings and catalog data to determine how equipment, fixtures, piping, ductwork, etc., are to be supported, mounted or suspended and provide extra steel bolts, inserts, pipe stands, brackets and accessories for proper supports whether or not shown on the drawings. When directed, submit drawings showing supports.
- D. If accessories are required to complete the work and meet the intent of the specification, it is the responsibility of the Contractor to provide such accessories.

## 2.3 MATERIAL AND EQUIPMENT SCHEDULE

- A. Submit to the Engineer as soon as practical, six (6) complete sets of the schedule of materials and equipment proposed for the installation, or electronic submittals as detailed below. Include manufacturers' names, catalog data, diagrams, drawings and other descriptive data and submit under one cover with an index sheet in front.

1. If Electronic files are submitted, a complete set of the schedule of materials and equipment proposed for the installation shall be included. Include manufacturers' names, catalog data, diagrams, drawings and other descriptive data. All information shall be submitted electronically in "pdf" format, and shall be separated into electronic "pdf" files according to the corresponding specification section (i.e. "22 10 06 - Plumbing Specialties.pdf"). Unless incomplete submittals are authorized by the project engineer, all Division 22 submittals shall be electronically sent at one time. Without authorization, incomplete submittals shall be rejected.
- B. Provide written certification that shop drawings are in accordance with the specifications and are dimensionally correct with reference to available space.
- C. All submittals will be reviewed a maximum of two (2) times. The cost of additional submittal reviews beyond those two specified will be charged to the Contractor.
- D. Shop drawings for the Engineer's files are required on the following items:
  1. Plumbing fixtures and floor drains.
  2. Water balance certification.
  3. Piping materials including valves.
  4. Piping insulation materials.
  5. Complete mechanical equipment electrical data and wiring details.
  6. Seismic restraints.

## 2.4 EQUIPMENT AND MATERIAL SUBSTITUTIONS

- A. It is the responsibility of the Contractor to investigate any desired substitutions for specified equipment prior to submission of his bid. The Mechanical Contractor shall be responsible for any changes required in mechanical, electrical, structural or vibration isolation systems and shall bear all cost for those changes whether the substitute equipment is named by manufacturer in the specifications or is submitted to the Architect for "or equal" consideration. All changes shall be accomplished in a manner acceptable to the Architect per Section 01 60 00 at no additional cost to the Owner.
- B. In order to obtain prior approval on equipment or material not specified in Division 22 Specifications or Equipment Schedules, Mechanical Contractor MUST submit to the Engineer any proposed equipment or material ten (10) working days prior to the bid date.

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- C. If ANY substitute equipment is submitted to Engineer for approval, without said equipment having been pre-approved, the entire submittal will be rejected for resubmittal.
- D. Any equipment manufacturers which are a subsidiary to the listed acceptable manufacturers are not considered equal. Therefore, it is the responsibility of the Contractor and equipment supplier to obtain prior approval as described in paragraph 2.4, this Section.

## 2.5 ELECTRICAL MOTORS

- A. Provide motors of a recognized manufacturer, wound for the voltage specified, and in conformance to latest standards of the manufacturer and performance of the National Electrical Manufacturers Association and the Institute of Electrical and Electronic Engineers. Provide motors as manufactured by General Electric, Westinghouse, Century or Siemens-Allis, Baldor or approved equal.
- B. Provide motors rated for continuous duty at 100% of rated capacity and temperature raise of 40 degrees Centigrade open type; 50 degrees Centigrade drip and splash proof; 55 degrees Centigrade explosion proof and totally enclosed above an ambient of 40 degrees Centigrade.
- C. Unless otherwise required, provide integral horsepower, polyphase motors, Class B, general purpose, squirrel cage, open type induction motors, T-frame.
- D. Provide single phase fractional horsepower motors of the open capacitor type. Generally, motors under 1/2 horsepower may be split phase type unless otherwise specified. Provide motors rated 1/2 horsepower or less with integral overcurrent protection.
- E. Insure the insulation resistance between stator conductor and frames of motors is not less than 1/2 megohm. Provide shop test of motors including temperature rise, insulation resistance, motor terminal voltage, normal operating line current, RPMs, breaker or switch size with fusing and overload relay sizes.

## PART 3 EXECUTION

### 3.1 COORDINATION OF WORK

- A. Compare the mechanical drawings and Specifications with the drawings and Specifications for other trades and report any discrepancies between them to the Engineer and obtain from him written instruction for changes necessary in the mechanical work. Install the mechanical work in cooperation with other trades installing inter-related work. Before installation, make proper provisions to avoid

interferences in a manner approved by the Engineer. Make all changes required in the work caused either by neglect or existing field conditions at no cost to the Owner.

- B. It is the responsibility of the General Contractor, Mechanical Contractor, Sprinkler and Electrical Contractor to coordinate installation of all equipment. Equipment installed prior to proper coordination, which interferes with the harmony and intent of the specifications and drawings, will be removed and reinstalled at the cost of the responsible Contractor.
- C. Furnish anchor bolts, sleeves, inserts and supports required for the mechanical work. Locate anchor bolts, sleeves, inserts and supports as directed by the trade requiring them and insure that they are properly installed.
- D. Adjust locations of pipes, ducts, equipment fixtures, etc., to accommodate the work and for interferences anticipated and encountered. Determine the exact route and location of each pipe and duct prior to fabrication.
  - 1. New work and remodeled areas are to interface with existing facility services. Contractor to familiarize himself with the extent of the work prior to submitting his bid. Failure to gain familiarity will not be grounds for additional compensation.
  - 2. Provide right-of-way to lines that pitch over those that do not pitch. For example, Plumbing drains normally have right-of-way. Lines whose elevations cannot be changed have the right-of-way over lines whose elevations can be changed.
  - 3. Make offsets, transitions and changes in direction in pipes and ducts as required to maintain proper head room and pitch.
- E. Install all mechanical work to permit removal without damage to other parts, to coils, fan shafts and wheels, filters, belt guards, sheaves and drives and all other parts requiring periodic replacement or maintenance. Arrange pipes, ducts and equipment to permit ready access to valves, cocks, traps, starters, motors, control components and to clear the openings of swinging and overhead doors and of access panels.

### 3.2 CHLORINATION OF DOMESTIC WATER LINES

- A. After the hot and cold water systems are complete, all fixtures connected, the system flushed out completely and the shut-off valve to the water main closed, fill the system with a solution containing 50 parts per million of available chlorine. Allow the solution to stand six (6) hours before flushing and returning to service.
- B. Then fill the system with a solution containing 100 parts per million of available chlorine. Allow this solution to stand two (2) hours before flushing and returning to

service.

- C. Notify the Owner twenty-four hours prior to test so his representative can witness test. Obtain chemical analysis of the domestic water lines after chlorination from a Certified Chemist and submit the results of these tests to the Engineer and Owner.

### 3.3 RECORD DRAWINGS

- A. Maintain record drawings showing exact locations and sizes, as actually installed, of piping, drains, cleanouts, ductwork, controls and equipment as specified herein. Deliver to the Owner/Architect upon completion and acceptance of the work, one (1) complete set of contract drawings marked to indicate all deviations from intended installation.

### 3.4 CUTTING AND PATCHING

- A. The General Contractor shall be responsible for all required Building cutting, patching, etc., incidental to this work and shall make all required repairs thereafter to the satisfaction of the Engineer. Do not cut into any major structural element, beam or column without the written approval of the Engineer.
- B. The General Contractor shall cut, patch, repair and/or replace pavements, sidewalks, roads and curbs as required to permit the installation of the plumbing work and pay all expenses incurred for this work.
- C. Openings in fire or smoke barriers for air handling ductwork or air movement shall be protected in accordance with NFPA 90A and 90B and the Standard Mechanical Code.
- D. Pipes, conduits, cables, wires, air ducts, pneumatic tubes and ducts and similar handling service equipment that pass through fire or smoke barriers shall be protected in accordance with NFPA 101 by the plumbing contractor.
- E. All fire stopping assemblies must be UL approved assemblies.

### 3.5 EXCAVATION AND TRENCHING FOR PIPING

- A. Excavate to the depths indicated on the Drawings or as required to provide adequate slope and burial depth. Excavated materials not required or suitable for backfill or fill shall be removed from the site. Do such grading as is necessary to prevent surface water from flowing into trenches or other excavations. Water accumulating therein shall be removed by pumping or by other method. Sheet piling and shoring shall be installed as may be necessary for protection of the work and for safety of personnel. Excavation shall be by open cut except that short sections of a trench may be tunneled if the pipe can be safely and properly installed and backfill can be properly tamped in such tunnel sections.

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- B. Trench Excavation: Grade bottom of trenches to provide uniform bearing and support for each section of pipe on undisturbed soil. Where rock is encountered excavate to a minimum overdepth of 4" below trench depths indicated on the Drawings or specified. Overdepth in rock excavation and unauthorized overdepths shall be backfilled. Whenever wet or otherwise unstable soil incapable of properly supporting the pipe is encountered such soil shall be removed and the trench backfilled to proper grade as hereinafter specified.
- C. Depth of Cover: Trenches shall be of depth that will provide three feet (3') minimum cover for domestic water, fire lines, sanitary and storm sewers from existing grade or from indicated finish grade, whichever is lower, unless otherwise specifically shown.
- D. Utilities Locating: Locate existing utility lines prior to beginning any excavation
- E. Protection of Existing Utilities: Existing utility lines to be retained that are shown on the Drawings or the locations of which are made known to the Contractor prior to excavation, as well as all utility lines uncovered during excavation operations, shall be protected from damage during excavation and backfilling, and if damaged, shall be repaired by the Contractor, at his expense.
- F. Trenches shall not be backfilled until required pressure and other tests have been performed and until the utilities systems as installed conform to requirements of Drawings and Specifications.
- G. Backfill trenches with excavated materials consisting of earth, sandy clay, sand, gravel, soft shale or other approved materials, free from clods of earth or stones 2-1/2" maximum dimension, deposited in 6" layers and compacted to 95% Standard Proctor Compaction Test of the maximum laboratory density determined in accordance with ASTM D698, Moisture-Density Relation of Soils. If fills fail to meet the specified densities, the Contractor shall remove and re-compact the fill until specified densities are achieved. Compaction test shall be performed for each fifty linear feet of trench.
- H. Provide a 4-inch thick (minimum) layer of 3/4-inch No. 4 gravel aggregate bedding beneath all buried piping. Bedding shall be compacted and leveled to provide sloping required.
- I. Tests for displacement of sewers: After the trench has been backfilled to 2 feet or more above the pipe, if the pipe shows poor alignment, displaced pipe, or any other defects, such defects shall be remedied by the Contractor at his expense.

### 3.6 EQUIPMENT START-UP AND TESTING

- A. Instruct the Owner's operating personnel during start-up and separate operating tests of each major item of equipment. During the operating tests, prove the operation of each

item of equipment to the satisfaction of the Engineer. Give at least seven (7) days notice to the Engineer of equipment start-up and operating tests.

### 3.7 CATALOG DATA FOR OWNER

- A. Provide, in looseleaf binders, two (2) sets of a compilation of catalog data of each manufactured item of equipment used in the mechanical work and present this compilation to the Owner/Architect for transmittal to the Owner before final payment is made. Include descriptive data and printed installation, operating and maintenance instructions for each item of equipment. Provide a complete double index as follows:
  - 1. Listing of products alphabetically by name.
  - 2. Listing the names of manufacturers whose products have been incorporated in the work alphabetically together with their addresses and the names and addresses of the local sales representatives.
  - 3. Certificates of Final Inspections.
  - 4. Complete spare parts data with current prices and supply sources.
  - 5. Extended warranties.
- B. Deliver to the Owner all special tools, lubricants, extra materials and any other products necessary for the proper operation and maintenance of the mechanical and plumbing systems.
- C. Provide project record documents indicating all changes from contract documents made during construction.
- D. Submit all Certificates of Final Inspections from the Administrative Authorities.
- E. Submit TAB reports on approved forms. Final TAB report submittals shall include all required rebalances if any are required.
- F. Submit to the Engineer as soon as practical, electronic closeout documents as detailed below.
  - 1. Include manufacturers' names, catalog data, diagrams, drawings and other descriptive data and submit under one cover with an index sheet in front. All information shall be submitted electronically in "pdf" format, and shall be separated into electronic "pdf" files.

### 3.8 INSTRUCTION OF OWNER'S REPRESENTATIVE

- A. Instruct the representative of the Owner in the proper operation and maintenance of all elements of the mechanical system.

### 3.9 PROTECTIVE COATINGS

- A. Paint exterior surfaces of steel piping run in or through concrete floor fill, under tile floors or underground, and aluminum surfaces in contact with masonry, with one coat of acid resisting bituminous base paint.

### 3.10 TEST AND ACCEPTANCE

- A. Water Piping System: Test with water at 100 psi for one (1) hour or with available city water pressure for twenty-four (24) hours to prove tight and free from leaks.
- B. Plumbing and Drainage System: Test the new system humidity and drain piping with water and prove tight. Test system with 10 feet of water for 24 hour period. Air test is not permitted.

### 3.11 NOISE CONTROL

- A. It is intended that the mechanical systems as installed under this contract be free from objectionable noise when the system is operating. The system shall operate at noise levels below criteria recommended for the application by ASHRAE. Provide vibration isolation accessories and isolate equipment, pipeline, ductwork, etc., as required so as to insure an acceptable noise level in all of the mechanical systems.

### 3.12 CLEANING AND ADJUSTING

- A. Do not allow waste material and rubbish to accumulate in or above the premises. After completion of this work, remove rubbish, tools, scaffolding and surplus materials from and about the building and leave all work clean and ready for use. Clean all equipment, pipes, valves and fittings of grease, metal cuttings and sludge. Repair any stoppage, discoloration or other damage to parts of the building, its finish or furnishings due to failure to properly clean the mechanical systems, without additional cost to the Owner. Adjust all automatic control devices for proper operation.

### 3.13 SYSTEM OPERATING TESTS

- A. After the successful completion of all equipment start-up and test requirements, perform the following tests on the complete mechanical systems:

1. First Operating Test by Contractor: Prove the operation of the mechanical systems and of each individual item in the systems. Give at least 10 days prior notice to the Engineer of such tests. Adjust and set proper quantities to all items and equipment. Should any item of the systems fail to perform in an approved manner, repeat this test until approved by the Engineer. During this test, balance circulation of heating and cooling water to balancing cocks, valves, thermostats and similar Items to insure that the mechanical systems perform as intended.
2. Checking by Owner and Engineer: Following the successful completion of first operating tests by the Contractor, the Owner and the Engineer have the privilege of making such tests as they may desire during a period of three weeks to ascertain in detail if any corrections are to be made to the system. At the end of the testing by the Owner and the Engineer, the Engineer may direct the Contractor in writing to make such corrections to the systems as are within the scope of the contract.
3. Contractor's Corrections to Systems: Make all required corrections to the systems and notify the Engineer in writing that the corrections outlined have been completed. Give at least seven (7) days notice of a final three-day operating test.
4. Three-Day Operating Test: Perform an operating test to the satisfaction of the Engineer for a period of three (3) days. Should any element of the systems not perform properly, make all required corrections and repeat the test until successfully performed.
  - a. Submit the Form of Record proposed by the Contractor for the recording of all measurements to the Engineer for approval at least two weeks before the approved form will be required by the Contractor.
  - b. Measurements: Make the following measurements at two-hour intervals (5 measurements per 8-hour day) during the three-day operating test.
    - 1) Electrical: Running amperes and voltage of each motor 3/4 horsepower or larger.
    - 2) Air temperatures in each heated or air conditioned space and outdoor temperatures.
  - c. Instruments: Provide all instruments, materials and labor to perform the tests and to obtain and record the measurements specified herein, including the furnishing of all required record forms as approved by the Engineer. Submit for the Engineer's approval, complete shop drawings or catalog data for all instruments to be used for the three day operating test and obtain approval at least two weeks before the instruments will be required for test

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measurements.

- d. Report: Submit four (4) copies of a written report of the three-day operating test on the approved Form of Record to the Engineer for approval and subsequent transmittal to the Owner.

### 3.14 MOTOR CONTROL

- A. General: Provide each motor 1/8 horsepower or larger with a suitable controller and devices that will perform the functions as specified for the respective motors, together with manual reset thermal overload, protection in each undergrounded conductor. Provide the controller either integral with circuit protective device or mounted in separate enclosure. Starters shall be Allen-Bradley, G.E., Westinghouse, Square D or approved equal.
- B. Control: Automatic control devices such as thermostats, float or pressure switches may control the starting and stopping of motor directly, provided the device used is designated for that purpose and has an adequate horsepower rating. When automatic control device does not have such a rating, use a magnetic starter with the automatic control device actuating the pilot control circuit. When combination manual and automatic control is specified and the control device operates the motor directly, provide a manual motor starter and selector switch. When combination manual and automatic control is specified and the automatic control device actuates the pilot control circuit, a magnetic control device actuates the pilot control provided. Provide all magnetic starters with push buttons or selector switches in the covers. Provide connections to the selector switch such that only the normal automatic regulating control devices will be bypassed when the switch is in the manual position. Connect all safety control devices, such as low or high pressure cutouts, high temperature cutouts and motor overload protective devices in the motor control circuit in both the manual and automatic positions of the selector switch control circuit. Make connections to any selector switch or to more than one (1) automatic regulatory control device in accordance with wiring diagrams recommended by the manufacturer and approved by the Engineer. Where required for manual control, provide push-button stations consisting of two (2) momentary contact operators, 600 volts, 10 amperes installed and wired for three wire control to provide under-voltage relays, auxiliary contacts or other devices required for a complete system.
- C. Location: Where the controller is located within sight of the motor driven equipment (fifty feet or less), the controller and circuit protective device shall be capable of being locked in the open position. Where the controller is located out of sight of the motor driven equipment (more than fifty feet) provide a non-fused safety disconnect, suitable for the service, and which opens all ungrounded conductors simultaneously, at or on the motor driven equipment.

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- D. Enclosure: Enclosure to be general purpose, NEMA Type 1 unless noted otherwise (NEMA Type 1 gasketed). The circuit breaker shall be operable by hand from outside the enclosure and shall be so interlocked with the door or doors that it must be returned to the "OFF" position before the door can be opened.
- E. Push-buttons: Provide maintained contact, standard duty type in a general purpose, NEMA Type 1 enclosure for surface mounting rated for 10 amperes continuous at 600 volts or less.

### 3.15 ACCESS PANELS

- A. Provide access panels as required in all walls, ceilings and ductwork to service and have access to all valves, and other operating parts. For all ceiling and wall access doors that are required in gypsum board and plaster, provide minimum 24" x 24", unless due to structural restraints the access door can be reduced to a minimum of 18" x 18", Milcor type appropriate for the construction involved.

### 3.16 DEMOLITION

- A. There are areas in the existing building in which demolition will have to be performed due to the requirements for remodeling. The demolition work involved is not fully described herein; however, the information given on the electrical and mechanical drawings and the information set out in the specifications will substantially serve to inform the mechanical Contractor as to the full extent of the demolition required.
- B. Contractor should visit job site to verify extent of demolition required to complete project.
- C. It is the intent of this Specification that all required demolition work be fully and completely performed and all work be accomplished in a neat and workmanlike manner.
- D. Remove all existing piping, fittings, heating, cooling, ventilation equipment that is required to accomplish the remodel work. All existing utilities that are disconnected shall be capped recessed in walls and floors. Contractor shall be responsible for visiting building and determining the extent of the demolition work. Contractor shall provide any necessary temporary piping required to keep existing building utilities (water, gas and sewer) in operation until new construction is completed to the extent that the new utilities can be reconnected.
- E. All rubbish, debris and expendable items resulting from demolition work shall be removed from the premises as it accumulates and disposed of at an off-site location by the Contractor.

### 3.17 SALVAGE

- A. Except as otherwise specified herein, or noted on drawings, the Contractor shall receive title to all building materials indicated to be demolished or removed which are not specifically designated as being retained by the Owner, said title to vest in the Contractor immediately upon receipt of Work Order. All salvage materials removed shall be taken from the premises promptly, as the storage of salvage materials on the site will not be permitted. Bidders shall take into account the salvage value to them of materials removed and such value shall be reflected in the bids.
- B. All items of usable equipment shall remain the property of the Owner. All such items of equipment which are to be removed and which are not to be reused shall be stored on the premises by the Contractor as directed by the Owner.
- C. Usable items shall be determined by the Owner and shall include existing heating and cooling pumps and other equipment so designated as "usable" by the Owner.

### 3.18 FINALLY

- A. It is the intention that this specification shall provide a complete installation except as herein before specifically accepted. All accessory construction and apparatus necessary or advantageous in the operation and testing of the work shall be included. The omission of specific reference to any part of the work necessary for such complete installation shall not be interpreted as relieving this Contractor from furnishing and installing such parts.

END OF SECTION

## SECTION 22 05 53

### IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Nameplates.
- B. Tags.
- C. Pipe Markers.
- D. Underground warning tape.
- E. Ceiling tacks.

##### 1.2 REFERENCE STANDARDS

- A. ASME A13.1 - Scheme for the Identification of Piping Systems; 2023.
- B. ASME A13.1 - Scheme for the Identification of Piping Systems; The American Society of Mechanical Engineers; 2007.
- C. ASTM D709 - Standard Specification for Laminated Thermosetting Materials; 2013.

##### 1.3 SUBMITTALS

- A. See Section 22 01 00 - General Plumbing Provisions for submittal procedures.
- B. List: Submit list of wording, symbols, letter size, and color coding for mechanical identification.
- C. Chart and Schedule: Submit valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number. Valve locations with tag numbers shall also be indicated on "as-built" drawings.
- D. Product Data: Provide manufacturers catalog literature for each product required.
- E. Manufacturer's Installation Instructions: Indicate special procedures, and installation.
- F. Project Record Documents: Record actual locations of tagged valves.



## PART 2 PRODUCTS

### 2.1 PLUMBING COMPONENT IDENTIFICATION GUIDELINE

- A. Pipe Markers: 3/4 inch diameter and higher.

### 2.2 IDENTIFICATION APPLICATIONS

- A. Instrumentation: Tags.
- B. Piping: Pipe markers.
- C. Pumps: Nameplates.
- D. Small-sized Equipment: Tags.
- E. Valves: Tags and ceiling tacks where located above lay-in ceiling.

### 2.3 NAMEPLATES

- A. Manufacturers:
  - 1. Kolbi Pipe Marker Co.
  - 2. Seton Identification Products.
  - 3. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
- B. Description: Laminated three-layer plastic with engraved letters.
  - 1. Letter Color: White.
  - 2. Letter Height: 1/4 inch.
  - 3. Background Color: Black.
  - 4. Plastic: Conform to ASTM D709.

### 2.4 TAGS

- A. Manufacturers:
  - 1. Advanced Graphic Engraving.
  - 2. Brady Corporation.
  - 3. Kolbi Pipe Marker Co.
  - 4. Seton Identification Products.

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- 5. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
- B. Plastic Tags: Laminated three-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 1-1/2 inch diameter.
- C. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.
- D. Valve Tag Chart: Typewritten letter size list in anodized aluminum frame. Valve tag chart should indicate valve size, valve model and valve location. Valve locations with tag numbers shall also be indicated on "as-built" drawings.

## 2.5 PIPE MARKERS

- A. Manufacturers:
  - 1. Brady Corporation.
  - 2. Kolbi Pipe Marker Co.
  - 3. MIFAB, Inc.
  - 4. Seton Identification Products.
  - 5. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
- B. Comply with ASME A13.1.
- C. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.
- D. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.
- E. Underground Plastic Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.
- F. Color code as follows:
  - 1. Potable, Cooling, Boiler, Feed, Other Water: Green with white letters.
  - 2. Fire Quenching Fluids: Red with white letters.
  - 3. Combustible Fluids: Brown with white letters.

## 2.6 UNDERGROUND WARNING TAPE

- A. Materials: Use foil-backed detectable type polyethylene tape suitable for direct burial, unless otherwise indicated.
- B. Foil-backed Detectable Type Tape: 3 inches wide, with minimum thickness of 5 mil, 0.005 inch, unless otherwise required for proper detection.
- C. Legend: Type of service, continuously repeated over full length of tape.

## 2.7 CEILING TACKS

- A. Manufacturers:
  - 1. Craftmark.
  - 2. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
- B. Color code as follows:
  - 1. Plumbing Valves: Green.

## PART 3 EXECUTION

### 3.1 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.

### 3.2 INSTALLATION

- A. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.
- B. Install tags with corrosion resistant chain.
- C. Install plastic pipe markers in accordance with manufacturer's instructions.
- D. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.
- E. Install underground plastic pipe markers 6 to 8 inches below finished grade, directly above buried pipe.
- F. Apply ASME A13.1 Pipe Marking Rules:
  - 1. Place pipe marker adjacent to changes in direction.

2. Place pipe marker adjacent each valve port and flange end.
  3. Place pipe marker at both sides of floor and wall penetrations.
  4. Place pipe marker every 25 to 50 feet interval of straight run.
- G. Install metallic detection tape located approximately 12 inches above pipe, where in ground utility lines are buried outside building footprint. Tape shall be continuous and be marked, indicating utility type (ie. water, sewer, gas, electric, etc).
- H. Use tags on piping 3/4 inch diameter and smaller.
1. Identify service, flow direction, and pressure.
  2. Install in clear view and align with axis of piping.
  3. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and Tee, at each side of penetration of structure or enclosure, and at each obstruction.
- I. Locate ceiling tacks to locate valves above lay-in panel ceilings. Locate in corner of panel closest to equipment.
- J. Identify all piping on this project as described, except piping which is concealed and/or not accessible. Identify piping concealed by ceiling tiles, floor tiles and, crawl spaces. Piping outside, on roof, above grade, and within parking structures shall also be identified. Only piping located within walls or inaccessible areas need not be identified. Install pipe markers on long straight runs every 20 feet. Install pipe markers above and below every floor penetration and on either side of every wall penetration and, insure there is at least one marker per pipe in every room. Install pipe markers at every valve, branch and, any change in piping direction. Install pipe markers so they are visible for a normal standing position.

END OF SECTION

## SECTION 22 07 19

### PIPING INSULATION

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Flexible elastomeric cellular insulation.
- B. Piping insulation.
- C. Jackets and accessories.

##### 1.2 RELATED REQUIREMENTS

- A. Section 22 10 05 - Plumbing Piping: Placement of hangers and hanger inserts.

##### 1.3 REFERENCE STANDARDS

- A. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- B. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2019, with Editorial Revision (2023).
- C. ASTM C195 - Standard Specification for Mineral Fiber Thermal Insulating Cement; 2007 (Reapproved 2019).
- D. ASTM C449 - Standard Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement; 2007 (Reapproved 2019).
- E. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.
- F. ASTM C533 - Standard Specification for Calcium Silicate Block and Pipe Thermal Insulation; 2017 (Reapproved 2023).
- G. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form; 2023.
- H. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel; 2008 (Reapproved 2013).
- I. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.

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- J. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2023.
- K. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials; National Fire Protection Association; 2006.

#### 1.4 SUBMITTALS

- A. See Section 22 01 00 - General Plumbing Provisions, for submittal procedures.
- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.
- C. Manufacturer's Instructions: Indicate installation procedures that ensure acceptable workmanship and installation standards will be achieved.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with not less than five years of documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified in this section with minimum five years of documented experience.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site, labeled with manufacturer's identification, product density, and thickness.
- B. Deliver material to job site in original non-broken factory packaging, labeled with manufacturer's density and thickness.

#### 1.7 FIELD CONDITIONS

- A. Maintain ambient conditions required by manufacturers of each product.
- B. Maintain temperature before, during, and after installation for minimum of 24 hours.
- C. Perform work at ambient and equipment temperature as recommended by the adhesive manufacturer.

### PART 2 PRODUCTS

#### 2.1 REQUIREMENTS FOR ALL PRODUCTS OF THIS SECTION

- A. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84, NFPA 255, or UL 723.

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## 2.2 GLASS FIBER

### A. Manufacturers:

1. Knauf Insulation.
2. Johns Manville Corporation.
3. Owens Corning Corp.
4. CertainTeed Corporation.
5. Armstrong World Industries, Inc.
6. Rubatex Corp.
7. Substitutions: See Section 22 01 00 - General Plumbing Provisions.

### B. Insulation: ASTM C547 ; semi-rigid, noncombustible, end grain adhered to jacket.

1. 'K' value: ASTM C177, 0.24 at 75 degrees F.
2. Maximum service temperature: 650 degrees F.
3. Maximum moisture absorption: 0.2 percent by volume.

### C. Vapor Barrier Jacket: White Kraft paper with glass fiber yarn, bonded to aluminized film; moisture vapor transmission when tested in accordance with ASTM E96/E96M of 0.02 perm-inches.

### D. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.

### E. Vapor Barrier Lap Adhesive:

1. Compatible with insulation.

### F. Insulating Cement/Mastic:

1. ASTM C195; hydraulic setting on mineral wool.

### G. Fibrous Glass Fabric:

1. Cloth: Untreated; 9 oz/sq yd weight.
2. Blanket: 1.0 lb/cu ft density.
3. Weave: 5x5.

### H. Indoor Vapor Barrier Finish:

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1. Cloth: Untreated; 9 oz/sq yd weight.
2. Vinyl emulsion type acrylic, compatible with insulation, white color.
- I. Outdoor Vapor Barrier Mastic:
  1. Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.
- J. Outdoor Breather Mastic:
  1. Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.
- K. Insulating Cement:
  1. ASTM C449/C449M.

## 2.3 CELLULAR GLASS

- A. Manufacturers:
  1. Pittsburgh Corning Corporation.
  2. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
- B. Insulation: ASTM C 552.
  1. 'K' value: 0.37 at 100 degrees F.
  2. Service Temperature: Up to 900 degrees F.
  3. Water Vapor Permeability: 0.005 perm inch.
  4. Water Absorption: 0.2 percent by volume, maximum.

## 2.4 HYDROUS CALCIUM SILICATE

- A. Manufacturers:
  1. Johns Manville Corporation.
  2. PABCO.
  3. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
- B. Insulation: ASTM C533 and ASTM C795; rigid molded, asbestos free, gold color.
  1. 'K' value: 2 and C518; 0.40 at 300 degrees F, when tested in accordance with 2 or 1.



- C. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.
- D. Insulating Cement:
  - 1. ASTM C449/C449M.

## 2.5 FLEXIBLE ELASTOMERIC CELLULAR INSULATION

- A. Manufacturer:
  - 1. Armacell International.
  - 2. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
- B. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534 Grade 2; use molded tubular material wherever possible.
  - 1. 'K' value: ASTM C 177; 0.27 at 75 degrees F.
  - 2. Maximum Moisture Absorption - Pipe Insulation: 3.5 percent, by weight, when tested in accordance with ASTM D 1056.
  - 3. Maximum Moisture Absorption - Sheets: 6.0 percent, by weight, when tested in accordance with ASTM D 1056.
  - 4. Water Vapor Permeability: 0.20 perm-inches, when tested in accordance with ASTM E 96.
- C. Elastomeric Foam Adhesive: Air dried, contact adhesive, compatible with insulation.
  - 1. Air dried, contact adhesive, compatible with insulation.

## 2.6 JACKETS

- A. PVC Plastic.
  - 1. Manufacturers:
    - a. Johns Manville Corporation.
    - b. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
  - 2. Jacket: One piece molded type fitting covers and sheet material, off-white color.
    - a. Minimum Service Temperature: 0 degrees F.
    - b. Maximum Service Temperature: 150 degrees F.

- c. Moisture Vapor Permeability: 0.002 perm inch, maximum, when tested in accordance with ASTM E96/E96M.
  - d. Thickness: 15 mil.
  - e. Connections: Pressure sensitive color matching vinyl tape.
- 3. Covering Adhesive Mastic:
  - a. Compatible with insulation.
- B. Canvas Jacket: UL listed 6 oz/sq yd plain weave cotton fabric treated with dilute fire retardant lagging adhesive.
  - 1. Lagging Adhesive:
    - a. Compatible with insulation.
- C. Aluminum Jacket: ASTM B209 (ASTM B209M) formed aluminum sheet.
  - 1. Thickness: 0.016 inch sheet.
  - 2. Finish: Embossed.
  - 3. Joining: Longitudinal slip joints and 2 inch laps.
  - 4. Fittings: 0.016 inch thick die shaped fitting covers with factory attached protective liner.
  - 5. Metal Jacket Bands: 3/8 inch wide; 0.015 inch thick aluminum.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that piping has been tested before applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.
- C. Repair all insulation that is damaged during construction using the same materials.

### 3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with NAIMA National Insulation Standards.
- C. Exposed Piping: Locate insulation and cover seams in least visible locations.

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- D. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.
- E. Glass fiber insulated pipes conveying fluids below ambient temperature:
  - 1. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.
  - 2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.
- F. For hot piping conveying fluids 140 degrees F or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.
- G. Inserts and Shields:
  - 1. Application: Piping 1 inch diameter or larger.
  - 2. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
  - 3. Insert location: Between support shield and piping and under the finish jacket.
  - 4. Insert configuration: Minimum 6 inches long, of same thickness and contour as adjoining insulation; may be factory fabricated.
  - 5. Insert material: Hydrous calcium silicate insulation or other heavy density insulating material suitable for the planned temperature range.
- H. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions.
- I. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces: Finish with PVC jacket and fitting covers.
- J. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces (less than 10 feet above finished floor): Finish with PVC jacket and fitting covers.
- K. Exterior Applications: Provide vapor barrier jacket. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor barrier cement. Cover with aluminum jacket with seams located on bottom side of horizontal piping.

- L. Buried Piping: Provide factory fabricated assembly with inner all-purpose service jacket with self-sealing lap, and asphalt impregnated open mesh glass fabric, with one mil thick aluminum foil sandwiched between three layers of bituminous compound; outer surface faced with a polyester film.

### 3.3 SCHEDULES

#### A. Plumbing Systems:

##### 1. Domestic Hot Water Supply:

###### a. Glass Fiber Insulation:

- 1) Pipe Size Range: 2 inch and under: 1 inch thickness.
- 2) Pipe Size Range: 2-1/2 inch and larger: 1-1/2 inch thickness.
- 3) Thickness: 1/2 inch (in interior walls).

##### 2. Domestic Cold Water Supply:

###### a. Glass Fiber Insulation:

- 1) Pipe Size Range: 2 inch and under: 1 inch thickness.
- 2) Pipe Size Range: 2-1/2 inch and larger: 1 inch thickness.
- 3) Thickness: 1/2 inch (in interior walls).

##### 3. Domestic Hot Water Recirculation:

###### a. Glass Fiber Insulation:

- 1) Pipe Size Range: All sizes.
- 2) Thickness: 1 inch.

END OF SECTION

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## SECTION 22 10 05

### PLUMBING PIPING

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Pipe, pipe fittings, valves, and connections for piping systems.
  - 1. Sanitary sewer.
  - 2. Domestic water.
  - 3. Flanges, unions, and couplings.
  - 4. Valves.
  - 5. Flow controls.
  - 6. Strainers.

##### 1.2 RELATED REQUIREMENTS

- A. Section 22 01 00 - General Plumbing Provisions.
- B. Section 22 05 53 - Identification for Plumbing Piping and Equipment.
- C. Section 22 07 19 - Piping Insulation.

##### 1.3 REFERENCE STANDARDS

- A. ANSI Z21.22 - American National Standard for Relief Valves for Hot Water Supply Systems; 2015 (Reaffirmed 2020).
- B. ASME B16.4 - Gray Iron Threaded Fittings: Classes 125 and 250; 2021.
- C. ASME B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes; 2018.
- D. ASME B31.9 - Building Services Piping; 2020.
- E. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.
- F. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings; 2021.
- G. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service; 2023a.

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- H. ASTM B32 - Standard Specification for Solder Metal; 2020.
- I. ASTM B42 - Standard Specification for Seamless Copper Pipe, Standard Sizes; 2020.
- J. ASTM C4 - Standard Specification for Clay Drain Tile and Perforated Clay Drain Tile; 2004 (Reapproved 2014).
- K. ASTM C14 - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe; 2015.
- L. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings; 2020a.
- M. ASTM D2239 - Standard Specification for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter; 2022.
- N. ASTM D2241 - Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series); 2020.
- O. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications; latest accepted edition.
- P. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems; 2020.
- Q. ASTM D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings; 2020.
- R. ASTM D2683 - Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing; 2020.
- S. ASTM D2846/D2846M - Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Hot- and Cold-Water Distribution Systems; 2019a.
- T. ASTM D2855 - Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets; 2020.
- U. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2023.
- V. ASTM D3517 - Standard Specification for "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Pressure Pipe; 2019.
- W. ASTM F876 - Standard Specification for Crosslinked Polyethylene (PEX) Tubing; 2024.

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- X. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers; 1992 (Reapproved 2008).
- Y. AWWA C110/A21.10 - Ductile-Iron and Gray-Iron Fittings; 2021.
- Z. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast; 2023.
- AA. CISPI 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications; 2021.
- BB. CISPI 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications; 2020.
- CC. MSS SP-67 - Butterfly Valves; 2022.
- DD. MSS SP-71 - Gray Iron Swing Check Valves, Flanged and Threaded Ends; 2018.
- EE. MSS SP-78 - Gray Iron Plug Valves, Flanged and Threaded Ends; 2011.
- FF. MSS SP-80 - Bronze Gate, Globe, Angle, and Check Valves; 2019.
- GG. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010, with Errata .
- HH. NFPA 54 - National Fuel Gas Code; National Fire Protection Association; 2012.
- II. NSF 61 - Drinking Water System Components - Health Effects; 2023, with Errata.
- JJ. NSF 372 - Drinking Water System Components - Lead Content; 2022.

#### 1.4 SUBMITTALS

- A. See Section 22 01 00 - General Plumbing Provisions, for submittal procedures.
- B. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.
- C. Welders' Certificates: Submit certification of welders' compliance with ASME BPVC-IX.
- D. Shop Drawings: For non-penetrating rooftop supports, submit detailed layout developed for this project, with design calculations for loadings and spacings.
- E. Sustainable Design Documentation: For soldered copper joints, submit installer's certification that the specified installation method and materials were used.
- F. Project Record Documents: Record actual locations of valves.

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## 1.5 QUALITY ASSURANCE

- A. Perform work in accordance with applicable codes.
- B. Perform Work in accordance with Arkansas, city of Fayetteville standards.
- C. Valves: Manufacturer's name and pressure rating marked on valve body.
- D. Welding Materials and Procedures: Conform to ASME (BPV IX) and applicable state labor regulations.
- E. Welder Qualifications: Certified in accordance with ASME (BPV IX).
- F. Identify pipe with marking including size, ASTM material classification, ASTM specification, potable water certification, water pressure rating.

## 1.6 REGULATORY REQUIREMENTS

- A. Perform Work in accordance with State of Arkansas, and city of Fayetteville plumbing code.
- B. Conform to city of Fayetteville , Arkansas code for installation of backflow prevention devices.
- C. Provide certificate of compliance from authority having jurisdiction indicating approval of installation of backflow prevention devices.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Provide temporary protective coating on cast iron and steel valves.
- C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

## 1.8 FIELD CONDITIONS

- A. Do not install underground piping when bedding is wet or frozen.



## PART 2 PRODUCTS

### 2.1 SANITARY SEWER PIPING, ABOVE GRADE

- A. Cast Iron Pipe: ASTM A74, service weight.
  - 1. Fittings: Cast iron.
  - 2. Joint Seals: ASTM C 564 neoprene gaskets.
- B. Cast Iron Pipe: CISPI 301, hubless, service weight.
  - 1. Fittings: Cast iron.
  - 2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.
- C. PVC Pipe: ASTM D2665.
  - 1. Fittings: PVC.
  - 2. Joints: Solvent welded, with ASTM D2564 solvent cement.
- D. In Fire-rated Walls:
  - 1. Cast iron.
    - a. Fittings: Cast iron.
- E. In Plenum-rated Areas:
  - 1. Cast iron.
    - a. Fittings: Cast iron.

### 2.2 WATER PIPING, ABOVE GRADE

- A. Copper Tube: ASTM B88 (ASTM B88M), Type L (B), Drawn (H).
  - 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
  - 2. Joints: ASTM B32, alloy Sn95 solder or mechanical press-fit couplings.

### 2.3 FLANGES, UNIONS, AND COUPLINGS

- A. Unions for Pipe Sizes 3 Inches and Under:
  - 1. Ferrous pipe: Class 150 malleable iron threaded unions.

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2. Copper tube and pipe: Class 150 bronze unions with soldered joints.
- B. Flanges for Pipe Size Over 1 Inch:
1. Ferrous pipe: Class 150 malleable iron threaded or forged steel slip-on flanges; preformed neoprene gaskets.
  2. Copper tube and pipe: Class 150 slip-on bronze flanges; preformed neoprene gaskets.
- C. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.
- D. Victaulic Devices:
1. Couplings shall consist of a one or more piece ductile or malleable iron cast housing, a synthetic rubber gasket of a central cavity pressure-responsive design, with nuts, bolts, locking toggle or lugs to secure unit together.
    - a. Coupling housings shall be cast of ductile iron conforming to ASTM A-536 (Grade 65-45-12) or malleable iron conforming to ASTM A-47 (Grade 32510), hot dip galvanized to ASTM A-153, or zinc electroplated to ASTM B-633, as manufactured by Victaulic Company of America. Refer to Victaulic product specifications for other materials.
    - b. Coatings shall consist of an alkyd enamel paint, or hot-dip galvanizing to ASTM A-153, or zinc electroplating to ASTM B-633, as specified.
  2. Couplings for grooved end steel pipe shall be Victaulic couplings for grooved end steel pipe.
    - a. Line, fittings and valve joints shall be Victaulic flexible (styles 75, 77, 78, or 791) or rigid (styles 005, 07 or HP-70).
    - b. Rigid joints shall be Victaulic style 07 "Zero-Flex", style HP-70 or style 005 "FireLock" couplings.
    - c. Pin assembled joints shall be Victaulic style 791 "Vic-Boltless" couplings.
    - d. Reducing joints shall be Victaulic style 750 Reducing Couplings for pipe to pipe joints or to create reducing fittings using straight fitting configurations.
    - e. Outlets: All joints designated Outlet Couplings, or where feasible to replace reducing outlet tees, shall be Victaulic style 72 Outlet Couplings (specify grooved, female or male threaded outlet).

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- f. Flanged Connections shall be Victaulic style 741 (2-24") "Vic-Flange" adapters, engaging directly into grooved pipe and bolting directly to ANSI Class 125 cast iron and Class 150 steel flanged components or style 743 (2-12") for ANSI Class 300 flanged components; installer to supply standard flange bolts.
  - g. Quick disconnects shall be Victaulic style 78 "Snap-Joint" Couplings or style 780/781 for double grooved pipe.
- 3. Gasket shall be molded of synthetic rubber in a central cavity, pressure-responsive configuration conforming to the pipe outside diameter and coupling housing, of elastomers having properties as designated in ASTM D-2000. Reference shall always be made to the latest published Selection Guide for Victaulic Gaskets for proper gasket selection for the intended service.
  - a. Water service: Gasket supplied for water services from -30 degrees F to +230 degrees F, shall be a Grade "E" EPDM compound, with green color code, molded of materials conforming to ASTM D-2000, designation 2CA615A25B24F17Z, recommended for hot water service within the specified temperature range, plus a variety of dilute acids, oil-free air, and many chemical services. Not recommended for petroleum services.
- 4. Bolts and nuts shall be heat treated carbon steel, track head, conforming to physical properties of ASTM A-183 minimum tensile 110,000 psi, black, or zinc electroplated to ASTM B-633, as supplied or specified.
- 5. Fittings shall be Victaulic full flow cast fittings, steel fittings or segmentally welded fittings with grooves or shoulders designed to accept Victaulic grooved end couplings.
  - a. Standard fittings shall be cast of ductile iron conforming to ASTM A-536 (Grade 65-45-12), or malleable iron conforming to ASTM A-47, Grade 32510, painted with alkyd enamel or hot-dip galvanized to ASTM A-153 or zinc electroplated to ASTM B-633 or cadmium plated to ASTM A-165 as required.
  - b. Standard steel fittings including large size elbows (16-24") shall be forged steel conforming to ASTM A-234 Grade WPB (0.375" wall), painted with alkyd enamel or hot-dip galvanized to ASTM A-153.
- 6. Branch outlets for hole cut steel pipe shall be Victaulic hole cut products.
- 7. Branch outlets shall be made with Victaulic style 920, 921 or 929 "Mechanical-T" branch connections with locating collar or foot engaging into hole. (Specify

outlet/branch connection type - grooved, female threaded or FIT, as available.)

8. Sprinkler head connections: Branch connections, direct sprinkler head connections, drop nipples and sprigs shall be made with Victaulic style 922 "Hooker" outlet connections with locating collar engaging into hole, assembled with standard plated breakaway head bolt (specify 1/2, 3/4 or 1" female threaded outlet).
9. Gauge, meter outlets for hole cut steel pipe shall be Victaulic strapless mechanical outlet products style 923 "Vic-Let" or 924 "Vic-O-Well" and shall provide a pipe outlet without a need for a strap or lower housing to wrap around the pipe.
10. Flow indicators for hole cut steel pipe shall be Victaulic style 736 Waterflow Indicators for wet sprinkler systems, to sense water flow to 10 GPM or greater.
11. Fittings for plain end steel pipe shall be Victaulic FIT fittings (sizes 1", 1 1/4", 1 1/2" and 2") with internal pipe stop for uniform takeout dimensions, 1/4-turn positive locking lugs of heat treated carbon steel conforming to AISI C-1022, cadmium plated, with externally locked-position indicator for inspection or connection of plain end steel pipe. FIT fittings shall have self-contained, pressure responsive gaskets: for water service (-30 degrees to +230 degrees F) Grade "E"; FIT silicone Grade "L" (-30 degrees to +160 degrees F) are recommended for fire protection dry systems, all systems operating below 0 degrees F, plus dry heat, air without hydrocarbons, certain chemical services and water to +160 degrees F. FIT Nitrile gaskets Grade "T" (0 degrees to +180 degrees F) are recommended for petroleum products, hydrocarbons, air without hydrocarbons, except hot dry air over +140 degrees F, vegetable and mineral oils within the specified temperature range. Not recommended for hot water services.
12. Reducing outlet tees shall be Victaulic FIT style 96 with female threaded outlet (specify 1/2, 3/4 or 1" outlet) for direct sprinkler head, sprig or drop nipple connections.
13. 90 degree elbows shall be Victaulic FIT style 969.
14. FIT Outlet/Mechanical-T shall be Victaulic FIT style 929 with FIT locking lug branch outlet (specify 1 1/4, 1 1/2 or 2" outlet) for direct branch connections.
15. Straight tees shall be Victaulic FIT style 963.
16. Straight couplings shall be Victaulic FIT style 960.
17. Reducing elbows shall be Victaulic FIT style 966 with female threaded outlet (specify 1/2, 3/4, or 1" outlet) for direct sprinkler head, sprig or drop nipple

connections.

## 2.4 MECHANICALLY FORMED TEE FITTINGS

- A. Mechanically extracted outlets shall have a height not less than three times the thickness of the branch tube wall.
- B. Branch tubes shall not restrict the flow in the main tube. Mechanical Contractor shall insure the branch tube penetration into the collar is of the correct depth.
- C. Mechanically formed tee fittings shall be cleaned and brazed with filler material conforming to AWS A5.8.

## 2.5 PRESS FITTINGS

- A. Fittings shall comply with NSF 61, CSA, UPC and be approved by the local jurisdiction. Wrot copper press fittings shall be made from commercially pure copper mill products per ASTM B 75 Alloy C12200. Cast copper alloy press fittings shall be made from materials with a minimum of 78% copper and a maximum of 15% zinc. The press fittings connections shall be compatible with seamless K, L or M copper tube made to ASTM B 88. Fittings shall have a maximum non-shock working pressure of 200 PSI between the temperatures of -20°F and +250°F. Elastomeric seals shall be made of EPDM material, and the fittings shall be manufactured with an inboard bead design. All fittings shall be installed in accordance with the manufacturer's installation instructions and according to local plumbing and mechanical codes. The press-to-connect joint shall be made with pressing tools and jaw sets recommended and authorized by press fitting manufacturer.

## 2.6 PIPE HANGERS AND SUPPORTS

- A. Provide hangers and supports that comply with MSS SP-58.
- B. Plumbing Piping - Drain, Waste, and Vent:
  - 1. Conform to ASME B31.9.
  - 2. Hangers for Pipe Sizes 1/2 Inch to 1-1/2 Inches: Carbon steel, adjustable swivel, split ring.
  - 3. Hangers for Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
  - 4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
  - 5. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.

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6. Wall Support for Pipe Sizes 4 Inches and Over: Welded steel bracket and wrought steel clamp.
  7. Vertical Support: Steel riser clamp.
  8. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
  9. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
- C. Plumbing Piping - Water:
1. Conform to ASME B31.9.
  2. Hangers for Pipe Sizes 1/2 Inch to 1-1/2 Inches: Carbon steel, adjustable swivel, split ring.
  3. Hangers for Cold Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
  4. Hangers for Hot Pipe Sizes 2 Inches to 4 Inches: Carbon steel, adjustable, clevis.
  5. Hangers for Hot Pipe Sizes 6 Inches and Over: Adjustable steel yoke, cast iron pipe roll, double hanger.
  6. Multiple or Trapeze Hangers: Steel channels with welded supports or spacers and hanger rods.
  7. Multiple or Trapeze Hangers for Hot Pipe Sizes 6 Inches and Over: Steel channels with welded supports or spacers and hanger rods, cast iron roll.
  8. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
  9. Wall Support for Pipe Sizes 4 Inches and Over: Welded steel bracket and wrought steel clamp.
  10. Vertical Support: Steel riser clamp.
  11. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
  12. Floor Support for Hot Pipe Sizes to 4 Inches: Cast iron adjustable pipe saddle, locknut, nipple, floor flange, and concrete pier or steel support.
  13. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

## 2.7 GATE VALVES

### A. Manufacturers:

22 10 05 -10

1. Conbraco Industries.
2. Nibco, Inc.
3. Milwaukee Valve Company.
4. Crane Co.
5. Substitutions: See Section 22 01 00 - General Plumbing Provisions.

B. Up To and Including 2 1/2 Inches:

1. MSS SP-80, Class 125, bronze body, bronze trim, rising stem, handwheel, inside screw, solid wedge disc, solder or threaded ends.

C. 3 Inches and Larger:

1. MSS SP-70, Class 125, iron body, bronze trim, outside screw and yoke, handwheel, solid wedge disc, flanged ends. Provide chain wheel operators for valves 6 inches and larger mounted over 8 feet above floor.

## 2.8 GLOBE VALVES

A. Manufacturers:

1. Conbraco Industries.
2. Nibco, Inc.
3. Milwaukee Valve Company.
4. Crane Co.
5. Substitutions: See Section 22 01 00 - General Plumbing Provisions.

B. Up To and Including 2 1/2 Inches:

1. MSS SP-80, Class 125, bronze body, bronze trim, handwheel, bronze disc, solder or threaded ends.

C. 3 Inches and Larger:

1. MSS SP-85, Class 125, iron body, bronze trim, handwheel, outside screw and yoke, renewable bronze plug-type disc, renewable seat, flanged ends. Provide chain-wheel operators for valves 6 inches and larger mounted over 8 feet above floor.

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## 2.9 BALL VALVES

### A. Manufacturers:

1. Conbraco Industries.
2. Nibco, Inc.
3. Milwaukee Valve Company.
4. Crane Co.

### B. Construction, 4 Inches and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze, ductile iron, or \_\_\_\_\_ body, 304 stainless steel, chrome plated brass, or \_\_\_\_\_ ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, solder, threaded, grooved, or \_\_\_\_\_ ends with union.

1. Substitutions: See Section 22 01 00 - General Plumbing Provisions.

### C. Construction, 4 Inches and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze, two piece body, chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle, threaded ends with union.

## 2.10 PLUG VALVES

### A. Manufacturers:

1. Conbraco Industries.
2. Nibco, Inc.
3. Milwaukee Valve Company.
4. Substitutions: See Section 22 01 00 - General Plumbing Provisions.

### B. Construction 2-1/2 Inches and Larger: 1, 250 psi CWP, cast iron body and plug, pressure lubricated, teflon or Buna N packing, flanged or grooved ends. Provide lever operator with set screw.

## 2.11 BUTTERFLY VALVES

### A. Manufacturers:

1. Hammond Valve.
2. Crane Co.

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3. Milwaukee Valve Company.
  4. Stockham.
  5. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
- B. Construction 1-1/2 Inches and Larger: MSS SP-67, 200 psi CWP, cast or ductile iron body, elastomer coated ductile iron disc, resilient replaceable EPDM seat, wafer ends, extended neck, 10 position lever handle.
- C. Provide gear operators for valves 6 inches and larger, and chain-wheel operators for valves mounted over 8 feet above floor.

## 2.12 FLOW CONTROLS

- A. Manufacturers:
1. ITT Bell & Gossett.
  2. Griswold Controls.
  3. Taco, Inc.
  4. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
- B. Construction: Class 125, Brass or bronze body with union on inlet and outlet, temperature and pressure test plug on inlet and outlet , blowdown/backflush drain.
- C. Calibration: Control flow within 5 percent of selected rating, over operating pressure range of 10 times minimum pressure required for control, maximum minimum pressure 3.5 psi psi.

## 2.13 SWING CHECK VALVES

- A. Manufacturers:
1. Hammond Valve.
  2. Nibco, Inc.
  3. Milwaukee Valve Company.
  4. Crane Co.
  5. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
- B. Up to 2 Inches:

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1. 1, Class 125, bronze body and cap, bronze swing disc with rubber seat, solder or threaded ends.

C. Over 2 Inches:

1. 1, Class 125, iron body, bronze swing disc, renewable disc seal and seat, flanged or grooved ends.

## 2.14 SPRING LOADED CHECK VALVES

A. Manufacturers:

1. Hammond Valve.
2. Crane Co.
3. Milwaukee Valve Company.
4. Stockham.
5. Substitutions: See Section 22 01 00 - General Plumbing Provisions.

B. Class 125, iron body, bronze trim, stainless steel springs, bronze disc, Buna N seals, wafer style ends.

## 2.15 WATER PRESSURE REDUCING VALVES

A. Manufacturers:

1. Amtrol Inc.
2. Cla-Val Co.
3. Watts Regulator Company.
4. Spence Engineering Co.
5. Substitutions: See Section 22 01 00 - General Plumbing Provisions.

B. Up to 2 Inches:

1. MSS SP-80, bronze body, stainless steel and thermoplastic internal parts, fabric reinforced diaphragm, strainer, threaded single union ends.

C. Over 2 Inches:

1. MSS SP-85, cast iron body, bronze fitted, elastomeric diaphragm and seat disc, flanged.

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## 2.16 RELIEF VALVES

### A. Pressure Relief:

1. Manufacturers:
  - a. Cla-Val Co.
  - b. Henry Technologies.
  - c. Watts Regulator Company.
  - d. Spence Engineering Co.
  - e. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
2. AGA Z21.22 certified, bronze body, teflon seat, stainless steel stem and springs, automatic, direct pressure actuated, temperature relief maximum 210 degrees F, capacity ASME (BPV IV) certified and labelled.

### B. Temperature and Pressure Relief:

1. Manufacturers:
  - a. Cla-Val Co.
  - b. Henry Technologies.
  - c. Watts Regulator Company.
  - d. Spence Engineering Co.
  - e. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
2. AGA Z21.22 certified, bronze body, teflon seat, stainless steel stem and springs, automatic, direct pressure actuated, temperature relief maximum 210 degrees F, capacity ASME (BPV IV) certified and labelled.

## 2.17 STRAINERS

### A. Manufacturers:

1. Armstrong International, Inc.
2. Green Country Filtration.
3. WEAMCO.
4. Substitutions: See Section 22 01 00 - General Plumbing Provisions.

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- B. Size 1-1/2 inch to 4 inch:
  - 1. Class 125, flanged iron body, Y pattern with 1/16 inch stainless steel perforated screen.
- C. Size 5 inch and Larger:
  - 1. Class 125, flanged iron body, basket pattern with 1/8 inch stainless steel perforated screen.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that excavations are to required grade, dry, and not over-excavated.

### 3.2 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- D. Install piping to maintain headroom, conserve space, and not interfere with use of space.
- E. Group piping whenever practical at common elevations.
- F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- G. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings. Refer to Section 22 07 19.
- H. Provide access where valves and fittings are not exposed. Coordinate size and location of access doors.

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- I. Establish elevations of buried piping outside the building to ensure not less than 3 ft of cover.
- J. Install vent piping penetrating roofed areas to maintain integrity of roof assembly.
- K. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.
- L. Provide support for utility meters in accordance with requirements of utility companies.
- M. Prepare exposed, unfinished pipe, fittings, supports, and accessories ready for finish painting.
- N. Install bell and spigot pipe with bell end upstream.
- O. Install valves with stems upright or horizontal, not inverted.
- P. Pipe vents from propane pressure reducing valves to outdoors and terminate in weather proof hood.
- Q. Install water piping to ASME B31.9.
- R. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.
- S. Sleeve pipes passing through partitions, walls and floors.
- T. Inserts:
  - 1. Provide inserts for placement in concrete formwork.
  - 2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
  - 3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
  - 4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
  - 5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.
- U. Pipe Hangers and Supports:
  - 1. Install in accordance with ASME B31.9.
  - 2. Support horizontal piping as scheduled.

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3. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
  4. Place hangers within 12 inches of each horizontal elbow.
  5. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
  6. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
  7. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
  8. Provide copper plated hangers and supports for copper piping.
  9. Provide hangers adjacent to motor driven equipment with vibration isolation.
  10. Support cast iron drainage piping at every joint.
- V. Where water pressure within the building exceeds 75 psi static, install an approved water-pressure reducing valve conforming to ASSE 1003 with strainer to reduce the building pressure to 75 psi static or less.

### 3.4 APPLICATION

- A. Use grooved mechanical couplings and fasteners only in accessible locations.
- B. Install unions downstream of valves and at equipment or apparatus connections.
- C. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.
- D. Install gate valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- E. Install globe valves for throttling, bypass, or manual flow control services.
- F. Provide lug end butterfly valves adjacent to equipment when provided to isolate equipment.
- G. Provide spring loaded check valves on discharge of water pumps.
- H. Provide flow controls in water recirculating systems where indicated.
- I. All sanitary waste and vent pipe installed above grade in fire-rated walls, fire-rated plenum spaces or return air plenums shall be cast iron.

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### 3.5 TOLERANCES

- A. Drainage Piping: Maintain invert elevations within 1/4 inch vertically of location indicated on drawings. Slope to drain at minimum of 1/4 inch per foot slope for pipes 2 inch and smaller and 1/8 inch per foot slope for pipes larger than 2 inch.
- B. Contractor must maintain inverts as indicated on the drawings. The contractor shall employ the latest precision technology available to insure the accuracy of the installation. If the contractor is unable to maintain, the contractor should notify the engineer IMMEDIATELY to obtain direction.
- C. Water Piping: Slope at minimum of 1/32 inch per foot and arrange to drain at low points.

### 3.6 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Disinfect water distribution system in accordance with Arkansas state and local codes.
- B. Prior to starting work, verify system is complete, flushed and clean.
- C. Ensure Ph of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
- D. Inject disinfectant, free chlorine in liquid, powder, tablet or gas form, throughout system to obtain 50 to 80 mg/L residual.
- E. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.
- F. Maintain disinfectant in system for 24 hours.
- G. If final disinfectant residual tests less than 25 mg/L, repeat treatment.
- H. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.
- I. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

### 3.7 SERVICE CONNECTIONS

- A. Connections to existing manholes shall be made at the locations shown on the plans. An opening shall be cut in the wall of the manhole and shall be of sufficient size to permit installation of the pipe at the designated elevation. The invert of the existing manhole shall be removed and a new invert constructed. The end of the pipe shall be flush with the inside wall of the manhole and shall be sealed in the wall with mortar to

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provide a water tight joint.

- B. Connection of dissimilar pipe materials shall be made with the specified adapter couplings.
- C. Sewers shall be encased or cradled in concrete where shown on the plans or as directed by the Engineer. Unless otherwise noted on the plans, concrete encasement shall encircle the pipe and shall be a minimum thickness of four inches.

### 3.8 SCHEDULES

#### A. Pipe Hanger Spacing:

##### 1. Metal Piping:

- a. Pipe size: 1/2 inches to 1-1/4 inches:
  - 1) Maximum hanger spacing: 8 ft.
  - 2) Hanger rod diameter: 1/4 inch.
- b. Pipe size: 1-1/2 inches to 2 inches:
  - 1) Maximum hanger spacing: 8 ft.
  - 2) Hanger rod diameter: 1/4 inch.
- c. Pipe size: 2-1/2 inches to 3 inches:
  - 1) Maximum hanger spacing: 8 ft.
  - 2) Hanger rod diameter: 3/8 inch.
- d. Pipe size: 4 inches to 6 inches:
  - 1) Maximum hanger spacing: 8 ft.
  - 2) Hanger rod diameter: 3/8 inch.
- e. Pipe size: 8 inches to 12 inches:
  - 1) Maximum hanger spacing: 10 ft.
  - 2) Hanger rod diameter: 1/2 inch.
- f. Pipe size: 14 inches and Over:
  - 1) Maximum hanger spacing: 10 ft.

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- 2) Hanger rod diameter: 7/8 inch..
2. Plastic Piping:
  - a. All sizes:
    - 1) Maximum hanger spacing: 6 ft.
    - 2) Hanger rod diameter: 3/8 inch.

END OF SECTION

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Washington County  
Sheriff's Office Interior Remodel  
Fayetteville, Arkansas

## SECTION 22 10 06

### PLUMBING SPECIALTIES

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Floor drains
- B. Backwater valves.
- C. Backflow preventers.
- D. Water hammer arrestors.
- E. Thermostatic mixing valves.

##### 1.2 RELATED REQUIREMENTS

- A. Section 22 10 05 - Plumbing Piping.
- B. Section 22 40 00 - Plumbing Fixtures.

##### 1.3 REFERENCE STANDARDS

- A. ASSE 1012 - Performance Requirements for Backflow Preventers with an Intermediate Atmospheric Vent; 2021.
- B. ASSE 1019 - Performance Requirements for Wall Hydrant with Backflow Protection and Freeze Resistance; 2023.
- C. NSF 61 - Drinking Water System Components - Health Effects; 2023, with Errata.
- D. NSF 372 - Drinking Water System Components - Lead Content; 2022.

##### 1.4 SUBMITTALS

- A. See Section 22 01 00 - General Plumbing Provisions, for submittal procedures.
- B. Product Data: Provide component sizes, rough-in requirements, service sizes, and finishes.
- C. Shop Drawings: Indicate dimensions, weights, and placement of openings and holes.
- D. Manufacturer's Instructions: Indicate Manufacturer's Installation Instructions: Indicate assembly and support requirements.

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- E. Project Record Documents: Record actual locations of equipment, cleanouts, backflow preventers, water hammer arrestors \_\_\_\_.
- F. Operation Data: Indicate frequency of treatment required for interceptors.
- G. Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.
- H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. Extra Loose Keys for Outside Hose Bibbs: Four.
- I. Product Data: Manufacturer's standard data sheets describing components including materials, dimensions, relationship to adjacent construction, and attachments.

## 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with not less than five years documented experience.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Accept specialties on site in original factory packaging. Inspect for damage.

## PART 2 PRODUCTS

### 2.1 DRAINS

- A. Manufacturers:
  - 1. Josam Company.
  - 2. Jay R. Smith Manufacturing Company.
  - 3. Zurn Industries, Inc.
  - 4. Wade Tyler Pipe.
  - 5. MIFAB, Inc.
  - 6. Striem.
  - 7. Watts Water Technologies.
  - 8. Striem, Edwardsville, KS USA
  - 9. Schier Products Company, Edwardsville, KS USA

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10. Substitutions: See Section 22 10 00 - General Plumbing Provisions.

11. Floor Drain:

- a. ASME A112.6.3; lacquered cast iron two piece body with double drainage flange, weep holes, reversible clamping collar, and round, adjustable round nickel bronze strainer with removable perforated sediment bucket.

## 2.2 BACK WATER VALVES

A. Manufacturers:

1. Jay R. Smith Manufacturing Company; Model \_\_\_\_\_: [www.jayrsmith.com/#sle](http://www.jayrsmith.com/#sle).
2. Savko Plastic Pipe & Fittings, Inc; Model \_\_\_\_\_: [www.savko.com/#sle](http://www.savko.com/#sle).
3. Zurn Industries, Inc; Model \_\_\_\_\_: [www.zurn.com/#sle](http://www.zurn.com/#sle).
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Cast Iron Back Water Valves: ANSI A112.21.2M; lacquered cast iron body and cover, brass valve, extension sleeve, and access cover.

C. Plastic Back Water Valves: ABS body and valve, extension sleeve, and access cover.

## 2.3 BACKFLOW PREVENTERS

A. Manufacturers:

1. Conbraco Industries.
2. Valve Solutions, Inc.
3. Watts Regulator Company.
4. Zurn Industries, Inc.
5. FEBCO.
6. Substitutions: See Section 22 01 00 - General Plumbing Provisions.

B. Reduced Pressure Backflow Preventers:

1. ASSE 1013; bronze body with bronze internal parts and stainless steel springs; two independently operating, spring loaded check valves; diaphragm type differential pressure relief valve located between check valves; third check valve that opens under back pressure in case of diaphragm failure; non-threaded vent outlet; assembled with two gate valves, strainer, and four test cocks.

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## 2.4 WATER HAMMER ARRESTORS

### A. Manufacturers:

1. Jay R. Smith Manufacturing Company.
2. Watts Regulator Company.
3. Zurn Industries, Inc.
4. Wade Tyler Pipe.
5. Substitutions: See Section 22 01 00 - General Plumbing Provisions.

### B. Water Hammer Arrestors:

1. Stainless steel construction, bellows type sized in accordance with PDI-WH 201, precharged suitable for operation in temperature range -100 to 300 degrees F and maximum 250 psi working pressure.

## 2.5 MIXING VALVES

### A. Thermostatic Mixing Valves:

#### 1. Manufacturers:

- a. ESBE.
- b. Leonard Valve Company.
- c. Honeywell Water Controls.
- d. Powers Process Controls.
- e. Substitutions: See Section 22 01 00 - General Plumbing Provisions.

2. Valve: Chrome plated cast brass body, stainless steel or copper alloy bellows, integral temperature adjustment.

#### 3. Accessories:

- a. Check valve on inlets.
- b. Volume control shut-off valve on outlet.
- c. Stem thermometer on outlet.
- d. Strainer stop checks on inlets.

4. Cabinet: 16 gage stainless steel, for surface mounting with keyed lock.
- B. Pressure Balanced Mixing Valves:
1. Manufacturers:
    - a. Delta Faucet Company.
    - b. H.G. Specialties.
    - c. Powers Process Controls.
    - d. Taconova.
    - e. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
  2. Valve: Chrome plated cast brass body, stainless steel cylinder, integral temperature adjustment.
  3. Accessories:
    - a. Volume control shut-off valve on outlet.
    - b. Stem thermometer on outlet.
    - c. Strainer stop checks on inlets.
    - d. Cabinet: 16 gage stainless steel, for surface mounting with keyed lock.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install approved potable water protection devices on plumbing lines where contamination of domestic water may occur; on janitor rooms, fire sprinkler systems, premise isolation, irrigation systems, flush valves, exterior hose bibbs.
- C. Pipe relief from backflow preventer to nearest floor drain or floor sink.
- D. Install water hammer arrestors complete with accessible isolation valve on hot and cold water supply piping to lavatories,, and water closets.
- E. Install city approved backwater valve on all building sewers at the exterior of the building and prior to connection to the public sewer system.

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- F. Install components in accordance with manufacture's instructions and approved product data submittals.

END OF SECTION

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Washington County  
Sheriff's Office Interior Remodel  
Fayetteville, Arkansas

## SECTION 22 10 08

### PLUMBING SOLDER

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Lead-free plumbing solder.

##### 1.2 RELATED SECTIONS

- A. Section 22 10 05 - Plumbing Piping.
- B. Section 22 40 00 - Plumbing Fixtures.

##### 1.3 REFERENCES

- A. ASTM B 32 - Standard Specification for Solder Metal; 1996.
- B. NSF 61 - Drinking Water System Components - Health Effects; 2002 (ANSI/NSF 61).

#### PART 2 PRODUCTS

##### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: The Harris Products Group
- B. Substitutions: See Section 22 01 00 - General Plumbing Provisions for equipment and material substitutions.
- C. Provide all plumbing solder from a single manufacturer.

##### 2.2 MATERIALS

- A. Plumbing Solder: Sterling® solder or equal, ASTM B 32, Alloy Grade TC; 95 percent tin, 4.85 percent copper, 0.15 percent selenium.
  - 1. Certified to comply with NSF 61.
  - 2. Melting Temperature: 410 degrees F.
  - 3. Tensile Strength: 7,130 psi.
  - 4. Shear Strength: 5,979 psi.
  - 5. Elongation Percent: 19.1.
  - 6. Brinell Hardness: 15.1.

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7. Burst Strength: 5,800 psi.
  8. Pressure/Temperature Test Data on Copper Tube Assemblies comprised of 3 inch, 2 inch, 1 inch, 3/4 inch, and 1/2 inch Tubing with a Reducing Tee:
    - a. No leaks at 70 degrees F., 200 psi, held for 2 minutes.
    - b. No leaks at 180 degrees F., 200 psi, held for 2 minutes.
    - c. No leaks at 70 degrees F., 2,000 psi, held for 5 minutes.
- B. No lead in plumbing solder.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Apply plumbing solder in accordance with manufacturer's recommendations.

END OF SECTION

22 10 08 -2

## SECTION 22 40 00

### PLUMBING FIXTURES

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Water closets.
- B. Lavatories.

##### 1.2 RELATED REQUIREMENTS

- A. Section 22 10 05 - Plumbing Piping.
- B. Section 22 10 06 - Plumbing Specialties.
- C. Division 26 - Equipment wiring, electrical characteristics and wiring connections.

##### 1.3 REFERENCE STANDARDS

- A. Comply with State of Arkansas adopted ADA Accessible Guidelines in regard to accessible or handicapped features.
- B. ASME A112.6.1M - Floor-Affixed Supports for Off-the-Floor Plumbing Fixtures for Public Use; 1997 (Reaffirmed 2017).
- C. ASME A112.18.1 - Plumbing Supply Fittings; 2018, with Errata.
- D. ASME A112.19.2 - Ceramic Plumbing Fixtures; 2018, with Errata.
- E. ASME A112.19.5 - Flush Valves and Spuds for Water Closets, Urinals, and Tanks; 2022.
- F. NSF 61 - Drinking Water System Components - Health Effects; 2023, with Errata.
- G. NSF 372 - Drinking Water System Components - Lead Content; 2022.

##### 1.4 SUBMITTALS

- A. Section 22 01 00 - General Plumbing Provisions: Procedures for submittals.
- B. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.
- C. Manufacturer's Instructions: Indicate installation methods and procedures.

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- D. Maintenance Data: Include fixture trim exploded view and replacement parts lists.
- E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

## 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum five years of documented experience.

## 1.6 REGULATORY REQUIREMENTS

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Accept fixtures on site in factory packaging. Inspect for damage.
- B. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

## 1.8 WARRANTY

- A. Provide five year manufacturer warranty for electric water cooler.
- B. All warranties to begin at Date of Substantial Completion as accepted by the Owner.

# PART 2 PRODUCTS

## 2.1 GENERAL REQUIREMENTS

- A. Potable Water Systems: Provide plumbing fittings and faucets that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

## 2.2 FLUSH VALVE WATER CLOSETS

- A. Water Closets: Vitreous china, ASME A112.19.2, floor mounted, siphon jet flush action, china bolt caps.
  - 1. Bowl: Height as indicated on plans, with elongated rim.
  - 2. Flush Volume: 1.6 gallon, maximum.
  - 3. Flush Valve: Exposed (top spud).
    - a. Dual-Filtered Bypass.

4. Flush Operation: Manual, oscillating handle.
5. Manufacturers:
  - a. American Standard Inc.
  - b. Kohler Company.
  - c. Zurn Industries, Inc.
  - d. Wiloughby
  - e. Sloan.
  - f. Acorn
  - g. Bradley
  - h. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
- B. Flush Valves: ASME A112.18.1, diaphragm type, dual-filtered bypass, complete with vacuum breaker stops and accessories.
  1. Exposed Type: Chrome plated, escutcheon, integral screwdriver stop.
    - a. Valve shall be equal to Sloan Valve Company; Model Sloan #111-DFB.
  2. Manufacturers:
    - a. Sloan Valve Company.
    - b. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
  3. Manual Operated:
    - a. Type: ASME A112.18.1 or ASME A112.19.5; diaphragm type complete with vacuum breaker stops, and accessories.
    - b. Supplied Volume Capacity: 1.5 gal per flush.
  4. Concealed Type: Rough brass, exposed parts chrome-plated, wall escutcheon, wheel handle stop.
- C. Seats:
  1. Manufacturers:
    - a. Beneke Magnolia.

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- b. Bemis Manufacturing Company.
  - c. Church Seat Company.
  - d. Olsonite.
  - e. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
- 2. Solid white plastic, open front, self-sustaining hinge, brass bolts, without cover.
- D. Water Closet Carriers:
  - 1. Manufacturers:
    - a. JOSAM Company.
    - b. Sloan Valve Company.
    - c. Zurn Industries, Inc.
    - d. Wade Tyler Pipe.
    - e. Watts Water Technologies.
    - f. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
  - 2. ASME A112.6.1M; adjustable cast iron frame, integral drain hub and vent, adjustable spud, lugs for floor and wall attachment, threaded fixture studs with nuts and washers.

## 2.3 LAVATORIES

- A. Lavatory Manufacturers:
  - 1. American Standard Inc.
  - 2. Zurn Industries, Inc.
  - 3. Kohler Company.
  - 4. Sloan.
  - 5. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
- B. Vitreous China Wall Hung Basin:
  - 1. ASME A112.19.2; vitreous china wall hung lavatory, with 4 inch high back, rectangular basin with front overflow.

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- a. Drilling Centers: 4 inch.
- C. Supply Faucet Manufacturers:
  - 1. Sloan Valve Company.
  - 2. Substitutions: See Section 22 01 00 - General Plumbing Provisions.
- D. Supply Faucet: ASME A112.18.1; chrome plated combination supply fitting with open grid strainer, water economy aerator with maximum flow of 0.5 gallon per minute (low-flow), single lever handle.
- E. Accessories:
  - 1. Chrome plated 17 gage brass P-trap with clean-out plug and arm with escutcheon.
  - 2. Offset waste with plug and strainer where required.
  - 3. Wheel handle stops.
  - 4. Rigid supplies.
  - 5. Carrier:
    - a. Manufacturers:
      - 1) JOSAM Company.
      - 2) Sloan Valve Company.
      - 3) Zurn Industries, Inc.
      - 4) Watts Water Technologies.
      - 5) Substitutions: See Section 22 01 00 - General Plumbing Provisions.
    - b. ASME A112.6.1M; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, concealed arm supports, bearing plate and studs.
- F. All lavatory faucets shall be listed to ASSE 1070 for temperature and pressure protection with a maximum control flow of 0.5 gpm (2.2 lpm). Faucet shall feature a single cartridge design for ease of repair and maintenance and shall provide an approach temperature of no greater than 5°F (3°C). Faucet shall include integral check valves to prevent cross flow and shall be in compliance with the American with Disabilities Act (ADA). Faucet shall feature ceramic disc mixing and shall be constructed using Lead Free material.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.
- B. Verify that electric power is available and of the correct characteristics.
- C. Confirm that millwork is constructed with adequate provision for the installation of counter top lavatories and sinks.

### 3.2 PREPARATION

- A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

### 3.3 INSTALLATION

- A. Install each fixture with trap, easily removable for servicing and cleaning.
- B. Provide chrome plated rigid supplies to fixtures with hand wheel stops, reducers, and escutcheons.
- C. Install components level and plumb.
- D. Install and secure fixtures in place with wall carriers and bolts.
- E. Solidly attach water closets to floor with lag screws. Lead flashing is not intended hold fixture in place.
- F. Install handicap valve handles to the accessible side.
- G. Provide HandiLav or approved equal molded trap and supply insulation kit for all exposed drain and supply handicap lavatories.
- H. Install a check valve in the hot and cold water supply lines at every service sink.

### 3.4 INTERFACE WITH WORK OF OTHER SECTIONS

- A. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.

### 3.5 ADJUSTING

- A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

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### 3.6 CLEANING

- A. Clean plumbing fixtures and equipment.

### 3.7 PROTECTION

- A. Protect installed products from damage due to subsequent construction operations.
- B. Repair or replace damaged products before Date of Substantial Completion.

### 3.8 SCHEDULES

- A. Fixture Heights: Install fixtures to heights above finished floor as indicated.
  - 1. Water Closet Flush Valves:
    - a. Standard: 11 inches min. above bowl rim.
  - 2. Lavatory:
    - a. Standard: 31 inches to top of basin rim.
    - b. Accessible: 34 inches maximum to top of basin rim.
- B. Minimum fixture rough-in sizes or as required for particular fixtures.
  - 1. Water Closet (Flush Valve Type):
    - a. Cold Water: 1 Inch.
    - b. Waste: 4 Inch.
    - c. Vent: 2 Inch.
  - 2. Lavatory:
    - a. Hot Water: 1/2 Inch.
    - b. Cold Water: 1/2 Inch.
    - c. Waste: 1-1/2 Inch.
    - d. Vent: 1-1/4 Inch.

END OF SECTION

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## SECTION 23 01 00

### GENERAL HVAC PROVISIONS

#### PART 1 GENERAL

##### 1.1 WORK INCLUDED

- A. The work covered by Division 23 sections consist of furnishing all labor, equipment, appliances and material for the heating, air conditioning, piping and plumbing systems in strict accordance with Codes, Specifications and the applicable drawings and subject to the terms and conditions of the contract. Include all appurtenances necessary to the proper operation of the systems and equipment specified.
- B. General Contractor shall install all concrete pads and bases required for installing mechanical equipment. Mechanical Contractor is responsible for the exact sizes required, location of anchor bolts, etc.
- C. Mechanical Contractor shall furnish and install roof-mounted air handler and exhaust fan bases and shall be the manufacturer's base.
- D. Some equipment may be furnished by other divisions. Mechanical Contractor is responsible to check the drawings and specifications for equipment that will be furnished by the Owner. Furnish the duct, insulation, controls, etc., on all equipment furnished by other divisions.
- E. General Contractor shall furnish and install all ceiling access panels required to service mechanical equipment, valves and controls above gyp board or hidden spline ceilings.

##### 1.2 RELATED SECTIONS

- A. The General Conditions and Division 1, General Requirements, as bound in the specification preamble, apply to all work under Division 23. Carefully note its contents in performance of the work.
- B. The Architectural, Plumbing, Electrical, and Structural plans and Specifications, including Information to Bidders and other pertinent documents issued by the Engineer are a part of this Specifications and the accompanying mechanical plans. Comply with them in every respect. Examine all the above carefully. Failure to comply does not relieve the Contractor of responsibility nor may it be used as a basis for additional compensation due to omission of architectural, electrical and structural details from the mechanical drawings.

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- C. All electrical power wiring is specified under Division 26 of the Specifications. Mechanical Contractor shall furnish all motor starters required for the control and protection of all motors furnished for the Division 23. Provide and install all automatic temperature and interlock wiring required for controlling mechanical equipment furnished under Division 23, in compliance with Division 26 of the Project Manual.

### 1.3 CODES, FEES AND LATERAL COSTS

- A. Comply with all applicable codes, specifications, local ordinances, industry standards, utility company regulations, and the applicable requirements of the following latest nationally accepted codes and standards:
1. 2021 Fayetteville, Arkansas City Building Code.
  2. 2021 Arkansas State Mechanical Code; latest accepted edition.
  3. 2018 Arkansas State Plumbing Code; latest accepted edition.
  4. 2014 Arkansas Energy Code; latest accepted edition.
  5. IBC - International Building Code; latest accepted edition.
  6. IFC - International Fire Code; latest accepted edition.
  7. IGC - International Gas Code; latest accepted edition.
  8. IMC - International Mechanical Code; latest accepted edition.
  9. IPC - International Plumbing Code; latest accepted edition.
  10. IECC - International Energy Conservation Code
  11. AMCA - Air Moving & Conditioning Association.
  12. ASA - American Standards Association.
  13. ASHRAE - American Society of Heating, Refrigerating and Air Conditioning Engineers.
  14. ASME - American Society of Mechanical Engineers.
  15. ASTM - American Society of Testing Materials.
  16. AWWA - American Water Works Association.
  17. NBS - National Bureau of Standards.

18. NEMA - National Electrical Manufacturers Association.
  19. NFPA - National Fire Protection Association.
  20. SMACNA - Sheet Metal & Air Conditioning Contractors' National Association.
  21. UL - Underwriters' Laboratories, Inc.
  22. AGA - American Gas Association.
  23. OSHA - Occupational Safety and Hazard Association.
  24. AABC - Associated Air Balance Councils
  25. NEBB - National Environmental Balancing Bureau
- B. Comply with State of Arkansas adopted ADA Accessible Guidelines in regard to accessible or handicapped features.
- C. In case of difference between building codes, Specifications, state Laws, local ordinances, industry standards and utility company regulations and the Contract Documents, the most stringent governs. Promptly notify the Engineer in writing of any such difference.
- D. Remove any work installed that does not comply with the requirements of the applicable building codes, state laws, local ordinances, industry standards, or utility company regulations, correct the deficiencies, and reinstall all work at no cost to the Owner.
- E. The mechanical drawings show the general arrangement of all piping, equipment and appurtenances. Follow as closely as actual building construction and the work of other trades will permit. Final layout will be governed by actual field conditions with all measurements verified at the site. Conform to the requirements shown on all of the drawings. General and structural drawings take precedence over mechanical drawings. Because of the small scale of the mechanical drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. Investigate the existing and finish conditions affecting the work and arrange the work accordingly, providing such fittings, valves and accessories as may be required to meet such conditions. Contractor shall verify that all equipment, ducts, pipes and all other components will fit in the space provided before fabrication or ordering.
- F. Obtain any and all required permits in connection with this work under the Contract and pay any and all fees in connection therewith. Arrange with the serving utility companies for the connections to all utilities and pay all charges for same including inspection fees and meters if required. Refundable deposits will be paid by the

Owner.

#### 1.4 GUARANTEE

- A. Furnish a written certificate guaranteeing all materials, equipment and labor furnished to be free of all defects for a period of one (1) year from and after the date of final acceptance of the work by the Owner and further guarantee to replace such work without charges if any defects appear within the stipulated guaranty period.

#### 1.5 SOIL CONDITIONS

- A. The Specifications and the drawings in no way imply the conditions of the soil to be encountered. When excavating may be required in execution of the work, this Contractor agrees that he has informed himself regarding conditions affecting the work.

#### 1.6 INSPECTION OF PREMISES

- A. Before submitting a bid, visit the site of the proposed job and determine the conditions relating to this work.

#### 1.7 UTILITIES, LOCATIONS AND ELEVATIONS

- A. Locations and elevations of the various utilities included within the scope of this work have been obtained from substantially reliable sources and are offered as a general guide only, without guarantee as to accuracy. Verify the location and elevation of all utilities and their relation to the work before entering into a contract.

#### 1.8 EXISTING BUILDING AND EXISTING MECHANICAL EQUIPMENT

- A. Visit the existing building and become thoroughly acquainted with the existing physical plant, mechanical systems and utilities in order to determine all of the work that will be necessary to carry out the intent of the plans and specifications.
- B. If it is necessary, in any way, to interfere with normal operations of the existing utilities in order to carry out the work, give notice and obtain written approval from the Owner before the work is started.
- C. The work involved in this project requires the Contractor to work inside of an existing building. Interruption of the regular routine of the building by the Contractor must be kept to a minimum.

#### 1.9 EQUIPMENT NOT SPECIFIED UNDER DIVISION 23

- A. Equipment which requires plumbing and other mechanical connections may be specified in another division of this Specification. Under these conditions, provide

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necessary utilities including waste, water, natural gas, duct, insulation and controls.

- B. Rough-in work from approved shop drawings only.

## PART 2 PRODUCTS

### 2.1 EQUIPMENT AND MATERIALS

- A. Provide new materials bearing the manufacturer's name, trade name and the UL label in every case where a standard has been established for the particular material.  
Furnish the standard product of a manufacturer regularly engaged in the production of the required type of equipment. Provide the manufacturer's latest approved design.
- B. Deliver equipment and materials to the site and store in original containers, suitably sheltered from the elements, but readily accessible for inspection by the Engineer until installed. Store all items subject to moisture damage (such as controls) in dry, heated spaces.
- C. Provide equipment and materials of the same general type and of the same make throughout the work to provide uniform appearance, operation and maintenance.
- D. Tightly cover equipment and protect against dirt, water and chemical or mechanical injury and theft. At the completion of the work, clean fixtures, equipment and materials and polish thoroughly. Turn over to the Owner in a condition satisfactory to the Engineer. Repair damage or defects developing before acceptance of the work at no expense to the Owner.
- E. Insure that items to be furnished fit the space available. Make necessary field measurements to ascertain space requirements, including those for connections.  
Furnish and install such sizes and shapes of equipment that the final installation suits the true intent and meaning of the drawings and Specifications.
- F. Follow manufacturer's directions completely in the delivery, storage, protection and installation of all equipment and materials. Promptly notify the Engineer in writing of any conflicts between any requirements of the Contract Documents and the manufacturers' directions. Obtain the Engineer's written instruction before proceeding with the work. Replace any work that does not comply with the manufacturers' directions or such written instructions from the Engineer, at no cost to the Owner.
- G. Support all products by service organizations with adequate spare parts inventory and personnel located reasonably close to the site.
- H. Where multiple units of the same type or class of products are required, provide all units of the same manufacturer.

## 2.2 EQUIPMENT ACCESSORIES

- A. Furnish and install all equipment, accessories, connections and incidental items necessary to fully complete all work, ready for use, occupancy and operation by the Owner.
- B. Where equipment requiring different arrangement or connections from those shown is provided, install the equipment to operate properly and in harmony with the intent of the drawings and Specifications.
- C. Support, plumb, rigid and true to line, all work and equipment furnished. Study thoroughly all general, structural, electrical, fire suppression and mechanical drawings, shop drawings and catalog data to determine how equipment, fixtures, piping, ductwork, etc., are to be supported, mounted or suspended and provide extra steel bolts, inserts, pipe stands, brackets and accessories for proper supports whether or not shown on the drawings. When directed, submit drawings showing supports.
- D. If accessories are required to complete the work and meet the intent of the specification, it is the responsibility of the Contractor to provide such accessories.

## 2.3 MATERIAL AND EQUIPMENT SCHEDULE

- A. Submit to the Engineer as soon as practical, six (6) complete sets of the schedule of materials and equipment proposed for the installation, or electronic submittals as detailed below. Include manufacturers' names, catalog data, diagrams, drawings and other descriptive data and submit under one cover with an index sheet in front.
  - 1. If Electronic files are submitted, a complete set of the schedule of materials and equipment proposed for the installation shall be included. Include manufacturers' names, catalog data, diagrams, drawings and other descriptive data. All information shall be submitted electronically in "pdf" format, and shall be separated into electronic "pdf" files according to the corresponding specification section (i.e. "23 40 00 - Air Cleaning Devices.pdf"). Unless incomplete submittals are authorized by the project engineer, all Division 23 submittals shall be electronically sent at one time. Without authorization, incomplete submittals shall be rejected.
- B. Provide written certification that shop drawings are in accordance with the specifications and are dimensionally correct with reference to available space.
- C. All submittals will be reviewed a maximum of two (2) times. The cost of additional submittal reviews beyond those two specified will be charged to the Contractor.
- D. Shop drawings for the Engineer's files are required on the following items:
  - 1. Filters.
  - 2. Grilles and Registers.

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3. Air Balance Certification.
4. Ductwork Materials Including Duct Accessories.
5. Duct Insulation Materials.

## 2.4 EQUIPMENT AND MATERIAL SUBSTITUTIONS

- A. It is the responsibility of the Contractor to investigate any desired substitutions for specified equipment prior to submission of his bid. The Mechanical Contractor shall be responsible for any changes required in mechanical, electrical, structural or vibration isolation systems and shall bear all cost for those changes whether the substitute equipment is named by manufacturer in the specifications or is submitted to the Architect for "or equal" consideration. All changes shall be accomplished in a manner acceptable to the Architect per Section 01 60 00 at no additional cost to the Owner.
- B. In order to obtain prior approval on equipment or material not specified in Division 23 Specifications or Equipment Schedules, Mechanical Contractor MUST submit to the Engineer any proposed equipment or material ten (10) working days prior to the bid date.
- C. If ANY substitute equipment is submitted to Engineer for approval, without said equipment having been pre-approved, the entire submittal will be rejected for resubmittal.
- D. Any equipment manufacturers which are a subsidiary to the listed acceptable manufacturers are not considered equal. Therefore, it is the responsibility of the Contractor and equipment supplier to obtain prior approval as described in paragraph 2.4, this Section.

## PART 3 EXECUTION

### 3.1 COORDINATION OF WORK

- A. Compare the mechanical drawings and Specifications with the drawings and Specifications for other trades and report any discrepancies between them to the Engineer and obtain from him written instruction for changes necessary in the mechanical work. Install the mechanical work in cooperation with other trades installing inter-related work. Before installation, make proper provisions to avoid interferences in a manner approved by the Engineer. Make all changes required in the work caused either by neglect or existing field conditions at no cost to the Owner.
- B. It is the responsibility of the General Contractor, Plumbing Contractor, Mechanical Contractor and Electrical Contractor coordinate installation of all equipment.

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Equipment installed prior to proper coordination, which interferes with the harmony and intent of the specifications and drawings, will be removed and reinstalled at the cost of the responsible Contractor.

- C. Furnish anchor bolts, sleeves, inserts and supports required for the mechanical work. Locate anchor bolts, sleeves, inserts and supports as directed by the trade requiring them and insure that they are properly installed.
- D. Slots, chases, openings and recesses in existing structure shall be cut, patched and repaired by the Contractor.
- E. Adjust locations of pipes, ducts, equipment fixtures, etc., to accommodate the work and for interferences anticipated and encountered. Determine the exact route and location of each pipe and duct prior to fabrication.
  - 1. Provide right-of-way to lines that pitch over those that do not pitch. For example, Plumbing drains normally have right-of-way. Lines whose elevations cannot be changed have the right-of-way over lines whose elevations can be changed.
  - 2. Make offsets, transitions and changes in direction in pipes and ducts as required to maintain proper head room and pitch.
- F. Install all mechanical work to permit removal without damage to other parts, to coils, fan shafts and wheels, filters, belt guards, sheaves and drives and all other parts requiring periodic replacement or maintenance. Arrange pipes, ducts and equipment to permit ready access to valves, cocks, traps, starters, motors, control components and to clear the openings of swinging and overhead doors and of access panels.
- G. Change the cross sectional dimensions of ductwork when required to meet job conditions, but maintain at least the same equivalent cross sectional area. Secure the approval of the Engineer prior to fabrication of ductwork requiring such changes. Sizes shown on the plans are clear dimensions; add for internal insulation if specified.

### 3.2 RECORD DRAWINGS

- A. Maintain record drawings showing exact locations and sizes, as actually installed, of piping, drains, cleanouts, ductwork, controls and equipment as specified herein. Deliver to the Owner/Architect upon completion and acceptance of the work, one (1) complete set of contract drawings marked to indicate all deviations from intended installation.
- B. Record drawings shall be provide in hard copy form, as well as, on a DVD in PDF form.



### 3.3 CUTTING AND PATCHING

- A. The General Contractor shall be responsible for all required cutting, patching, etc., incidental to this work and shall make all required repairs thereafter to the satisfaction of the Engineer. Do not cut into any major structural element, beam or column without the written approval of the Engineer.
- B. Openings in fire or smoke barriers for air handling ductwork or air movement shall be protected in accordance with NFPA 90A and 90B and the Mechanical Code.
- C. Pipes, conduits, cables, wires, air ducts, pneumatic tubes and ducts and similar handling service equipment that pass through fire or smoke barriers shall be protected in accordance with NFPA 101.
- D. All fire stopping assemblies must be UL approved assemblies.

### 3.4 EQUIPMENT START-UP AND TESTING

- A. Instruct the Owner's operating personnel during start-up and separate operating tests of each major item of equipment. During the operating tests, prove the operation of each item of equipment to the satisfaction of the Engineer. Give at least seven (7) days notice to the Engineer of equipment start-up and operating tests.
- B. Refer to Section 23 08 00 for additional information.

### 3.5 CATALOG DATA FOR OWNER

- A. Provide, in looseleaf binders, two (2) sets of a compilation of catalog data of each manufactured item of equipment used in the mechanical work and present this compilation to the Owner/Architect for transmittal to the Owner before final payment is made. Include descriptive data and printed installation, operating and maintenance instructions for each item of equipment. Provide a complete double index as follows:
  - 1. Listing of products alphabetically by name.
  - 2. Listing the names of manufacturers whose products have been incorporated in the work alphabetically together with their addresses and the names and addresses of the local sales representatives.
  - 3. Certificates of Final Inspections.
  - 4. Complete spare parts data with current prices and supply sources.
  - 5. Extended warranties.

- B. Deliver to the Owner all special tools, lubricants, extra materials and any other products necessary for the proper operation and maintenance of the mechanical and plumbing systems.
- C. Provide project record documents indicating all changes from contract documents made during construction.
- D. Submit all Certificates of Final Inspections from the Administrative Authorities.
- E. Submit TAB reports on approved forms. Final TAB report submittals shall include all required rebalances if any are required.

### 3.6 INSTRUCTION OF OWNER'S REPRESENTATIVE

- A. Instruct the representative of the Owner in the proper operation and maintenance of all elements of the mechanical system. Spend not less than five (5) days in such formal instruction and additional time as directed by the Engineer to fully prepare the Owner to operate and maintain the mechanical equipment.
- B. Provide classroom and hands-on training of Owner's designated personnel on operation and maintenance of the HVAC system, control system, and all equipment items.

### 3.7 PROTECTIVE COATINGS

- A. Paint exterior surfaces of steel piping run in or through concrete floor fill, under tile floors or underground, and aluminum surfaces in contact with masonry, with one coat of acid resisting bituminous base paint.
- B. Paint all exposed galvanized ducts behind grilles flat black.

### 3.8 NOISE CONTROL

- A. It is intended that the mechanical systems as installed under this contract be free from objectionable noise when the system is operating. The system shall operate at noise levels below criteria recommended for the application by ASHRAE. Provide vibration isolation accessories and isolate equipment, pipeline, ductwork, etc., as required so as to insure an acceptable noise level in all of the mechanical systems.

### 3.9 CLEANING AND ADJUSTING

- A. Do not allow waste material and rubbish to accumulate in or above the premises. After completion of this work, remove rubbish, tools, scaffolding and surplus materials from and about the building and leave all work clean and ready for use. Clean all equipment, pipes, valves and fittings of grease, metal cuttings and sludge.

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Repair any stoppage, discoloration or other damage to parts of the building, its finish or furnishings due to failure to properly clean the mechanical systems, without additional cost to the Owner. Adjust all automatic control devices for proper operation.

### 3.10 SYSTEM OPERATING TESTS

- A. After the successful completion of all equipment start-up and test requirements, perform the following tests on the complete mechanical systems:
1. First Operating Test by Contractor: Prove the operation of the mechanical systems and of each individual item in the systems. Give at least 10 day prior notice to the Engineer of such tests. Adjust and set proper quantities to all items and equipment. Should any item of the systems fail to perform in an approved manner, repeat this test until approved by the Engineer. During this test, balance circulation of heating and cooling water to balancing cocks, valves, thermostats and similar Items to insure that the mechanical systems perform as intended.
  2. Checking by Owner and Engineer: Following the successful completion of first operating tests by the Contractor, the Owner and the Engineer have the privilege of making such tests as they may desire during a period of three weeks to ascertain in detail if any corrections are to be made to the system. At the end of the testing by the Owner and the Engineer, the Engineer may direct the Contractor in writing to make such corrections to the systems as are within the scope of the contract.
  3. Contractor's Corrections to Systems: Make all required corrections to the systems and notify the Engineer in writing that the corrections outlined have been completed. Give at least seven (7) days notice of a final three-day operating test.
  4. Three-Day Operating Test: Perform an operating test to the satisfaction of the Engineer for a period of three (3) days. Should any element of the systems not perform properly, make all required corrections and repeat the test until successfully performed.
    - a. Submit the Form of Record proposed by the Contractor for the recording of all measurements to the Engineer for approval at least two weeks before the approved form will be required by the Contractor.
    - b. Measurements: Make the following measurements at two-hour intervals (5 measurements per 8-hour day) during the three-day operating test.
      - 1) Electrical: Running amperes and voltage of each motor 3/4 horsepower or larger.

- 2) Air temperatures in each heated or air conditioned space and outdoor temperatures.
- c. Instruments: Provide all instruments, materials and labor to perform the tests and to obtain and record the measurements specified herein, including the furnishing of all required record forms as approved by the Engineer. Submit for the Engineer's approval, complete shop drawings or catalog data for all instruments to be used for the three day operating test and obtain approval at least two weeks before the instruments will be required for test measurements.
- d. Report: Submit four (4) copies of a written report of the three-day operating test on the approved Form of Record to the Engineer for approval and subsequent transmittal to the Owner.

### 3.11 ACCESS PANELS

- A. Provide access panels as required in all walls, ceilings and ductwork to service and have access to all valves, operating parts and duct mounted fire dampers. For all ceiling and wall access doors that are required in gypsum board and plaster, provide minimum 24" x 24", unless due to structural restraints the access door can be reduced to a minimum of 18" x18", Milcor type appropriate for the construction involved.

### 3.12 TEMPORARY HEATING AND COOLING

- A. Permanent heating and cooling systems may be used to provide temporary heating and cooling to the building during construction, if the following requirements are met:
  1. Provide filters in equipment filter racks.
  2. Provide filter material at entrance to all return air ducts or over permanent return air grilles. All return air ductwork is to be protected from construction dust and debris. If return air duct work is not protected prior to equipment startup for temporary use, the Contractor will pay to have the entire ductwork system of the affected equipment thoroughly cleaned prior to Owner occupancy.
  3. Contractor shall provide and pay for operation, maintenance, regular replacement of filters and worn or consumed parts.
  4. Shall replace any equipment that is damaged during temporary usage with new equipment.
  5. All warranty periods shall not begin until Certificate of Substantial Completion is issued.

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6. Verify with engineer that the installation is ready and approved for operation.
- B. Just prior to turning the building or portions of the building over to the Owner, Contractor will replace all filters on equipment used for temporary ventilation, heat or cooling during construction.

### 3.13 DEMOLITION

- A. There are areas in the existing building in which demolition will have to be performed due to the requirements for remodeling. The demolition work involved is not fully described herein; however, the information given on the electrical and mechanical drawings and the information set out in the specifications will substantially serve to inform the mechanical Contractor as to the full extent of the demolition required.
- B. Contractor should visit job site to verify extent of demolition required to complete project.
- C. It is the intent of this Specification that all required demolition work be fully and completely performed and all work be accomplished in a neat and workmanlike manner.
- D. Remove all existing piping, fittings, heating, cooling, ventilation equipment that is required to accomplish the remodel work. All existing utilities that are disconnected shall be capped recessed in walls and floors. Contractor shall be responsible for visiting building and determining the extent of the demolition work. Contractor shall provide any necessary temporary piping required to keep existing building utilities (water, gas and sewer) in operation until new construction is completed to the extent that the new utilities can be reconnected.
- E. All rubbish, debris and expendable items resulting from demolition work shall be removed from the premises as it accumulates and disposed of at an off-site location by the Contractor.

### 3.14 SALVAGE

- A. Except as otherwise specified herein, or noted on drawings, the Contractor shall receive title to all building materials indicated to be demolished or removed which are not specifically designated as being retained by the Owner, said title to vest in the Contractor immediately upon receipt of Work Order. All salvage materials removed shall be taken from the premises promptly, as the storage of salvage materials on the site will not be permitted. Bidders shall take into account the salvage value to them of materials removed and such value shall be reflected in the bids.

- B. All items of usable equipment shall remain the property of the Owner. All such items of equipment which are to be removed and which are not to be reused shall be stored on the premises by the Contractor as directed by the Owner.
- C. Usable items shall be determined by the Owner and shall include existing heating and cooling pumps and other equipment so designated as "usable" by the Owner.

### 3.15 FINALLY

- A. It is the intention that this specification shall provide a complete installation except as herein before specifically accepted. All accessory construction and apparatus necessary or advantageous in the operation and testing of the work shall be included. The omission of specific reference to any part of the work necessary for such complete installation shall not be interpreted as relieving this Contractor from furnishing and installing such parts.

END OF SECTION

## SECTION 23 05 53

### IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Nameplates.
- B. Tags.
- C. Stencils.
- D. Ceiling tacks.

##### 1.2 REFERENCE STANDARDS

- A. ASME A13.1 - Scheme for the Identification of Piping Systems; 2023.

##### 1.3 SUBMITTALS

- A. See Section 23 01 00 - General HVAC Provisions, for submittal procedures.
- B. List: Submit list of wording, symbols, letter size, and color coding for mechanical identification.
- C. Chart and Schedule: Submit valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number. Valve locations with tag numbers shall also be indicated on "as-built" drawings.
- D. Product Data: Provide manufacturers catalog literature for each product required.
- E. Manufacturer's Installation Instructions: Indicate special procedures, and installation.
- F. Project Record Documents: Record actual locations of tagged valves.

#### PART 2 PRODUCTS

##### 2.1 IDENTIFICATION APPLICATIONS

- A. Dampers: Ceiling tacks, where located above lay-in ceiling.
- B. Ductwork: Stencilled painting.
- C. Instrumentation: Tags.

## 2.2 NAMEPLATES

### A. Manufacturers:

1. Advanced Graphic Engraving.
2. Kolbi Pipe Marker Co.
3. Seton Identification Products.
4. Substitutions: See Section 23 01 00 - General HVAC Provisions.

### B. Description: Laminated three-layer plastic with engraved letters.

1. Letter Color: White.
2. Letter Height: 1/2 inch.
3. Background Color: Black.
4. Plastic: Conform to ASTM D709.

## 2.3 TAGS

### A. Manufacturers:

1. Advanced Graphic Engraving.
2. Brady Corporation.
3. Kolbi Pipe Marker Co.
4. Seton Identification Products.
5. Substitutions: See Section 23 01 00 - General HVAC Provisions.

### B. Plastic Tags: Laminated three-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 1-1/2 inch diameter.

### C. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.

### D. Valve Tag Chart: Typewritten letter size list in anodized aluminum frame. Valve tag chart should indicate valve size, valve model and valve location. Valve locations with tag numbers shall also be indicated on "as-built" drawings.

## 2.4 STENCILS

### A. Manufacturers:

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1. Brady Corporation.
2. Kolbi Pipe Marker Co.
3. Seton Identification Products.
4. Substitutions: See Section 23 01 00 - General HVAC Provisions.

B. Stencils: With clean cut symbols and letters of following size:

1. 3/4 to 1-1/4 inch Outside Diameter of Insulation or Pipe: 8 inch long color field, 1/2 inch high letters.
2. 1-1/2 to 2 inch Outside Diameter of Insulation or Pipe: 8 inch long color field, 3/4 inch high letters.
3. 2-1/2 to 6 inch Outside Diameter of Insulation or Pipe: 12 inch long color field, 1-1/4 inch high letters.
4. 8 to 10 inch Outside Diameter of Insulation or Pipe: 24 inch long color field, 2-1/2 inch high letters.
5. Over 10 inch Outside Diameter of Insulation or Pipe: 32 inch long color field, 3-1/2 inch high letters.
6. Ductwork and Equipment: 2-1/2 inch high letters.

## 2.5 CEILING TACKS

A. Manufacturers:

1. Craftmark.
2. Substitutions: See Section 23 01 00 - General HVAC Provisions.

B. Description: Steel with 3/4 inch diameter color coded head.

C. Color code as follows:

1. Yellow - HVAC equipment.
2. Red - Fire dampers/smoke dampers.
3. Blue - Heating/cooling valves.

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## PART 3 EXECUTION

### 3.1 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.

### 3.2 INSTALLATION

- A. Install nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.
- B. Install tags with corrosion resistant chain.
- C. Install ductwork with stencilled painting. Identify with air handling unit identification number and area served. Locate identification at air handling unit, at each side of penetration of structure or enclosure, and at each obstruction.
- D. Locate ceiling tacks to locate valves or dampers above lay-in panel ceilings. Locate in corner of panel closest to equipment.

END OF SECTION

## SECTION 23 05 93

### TESTING, ADJUSTING, AND BALANCING

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Testing, adjustment, and balancing of air systems.
- B. Measurement of final operating condition of HVAC systems.

##### 1.2 REFERENCE STANDARDS

- A. AABC MN-1 - National Standard for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems; Associated Air Balance Council; 2002.
- B. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems; 2008, with Errata (2019).
- C. NEBB (TAB) - Procedural Standards for Testing Adjusting Balancing of Environmental Systems; 2005, Seventh Edition.
- D. SMACNA (TAB) - HVAC Systems Testing, Adjusting and Balancing; 2023.

##### 1.3 SUBMITTALS

- A. See Section 23 01 00 - General HVAC Provisions, for submittal procedures.
- B. Qualifications: Submit name of adjusting and balancing agency and TAB supervisor for approval within 30 days after award of Contract.
- C. TAB Plan: Submit a written plan indicating the testing, adjusting, and balancing standard to be followed and the specific approach for each system and component.
  - 1. Submit to Architect.
  - 2. Submit six weeks prior to starting the testing, adjusting, and balancing work.
  - 3. Include certification that the plan developer has reviewed the contract documents, the equipment and systems, and the control system with the Architect and other installers to sufficiently understand the design intent for each system.
  - 4. Include at least the following in the plan:
    - a. Preface: An explanation of the intended use of the control system.

- b. List of all air flow, water flow, sound level, system capacity and efficiency measurements to be performed and a description of specific test procedures, parameters, formulas to be used.
- c. Copy of field checkout sheets and logs to be used, listing each piece of equipment to be tested, adjusted and balanced with the data cells to be gathered for each.
- d. Identification and types of measurement instruments to be used and their most recent calibration date.
- e. Discussion of what notations and markings will be made on the duct and piping drawings during the process.
- f. Final test report forms to be used.
- g. Detailed step-by-step procedures for TAB work for each system and issue, including:
  - 1) Terminal flow calibration (for each terminal type).
  - 2) Diffuser proportioning.
  - 3) Branch/submain proportioning.
  - 4) Total flow calculations.
  - 5) Rechecking.
  - 6) Diversity issues.
- h. Expected problems and solutions, etc.
- i. Criteria for using air flow straighteners or relocating flow stations and sensors ; analogous explanations for the water side.
- j. Details of how TOTAL flow will be determined; for example:
  - 1) Air: Sum of terminal flows via control system calibrated readings or via hood readings of all terminals, supply (SA) and return air (RA) pitot traverse, SA or RA flow stations.
- k. Specific procedures that will ensure that both air and water side are operating at the lowest possible pressures and methods to verify this.
- l. Confirmation of understanding of the outside air ventilation criteria under all conditions.

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- m. Method of verifying and setting minimum outside air flow rate will be verified and set and for what level (total building, zone, etc.).
  - n. Time schedule for TAB work to be done in phases (by floor, etc.).
  - o. Description of TAB work for areas to be built out later, if any.
  - p. Procedures for field technician logs of discrepancies, deficient or uncompleted work by others, contract interpretation requests and lists of completed tests (scope and frequency).
  - q. Procedures for formal progress reports, including scope and frequency.
  - r. Procedures for formal deficiency reports, including scope, frequency and distribution.
- D. Field Logs: Submit at least once a week to Construction Manager and Engineer. Field logs should be submitted with weekly progress reports and include a record of all discrepancies and issues encountered during the period covered.
- E. Progress Reports.
- F. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
- 1. Submit to the Construction Manager and Engineer within two weeks after completion of testing, adjusting, and balancing.
  - 2. Revise TAB plan to reflect actual procedures and submit as part of final report.
  - 3. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Architect and for inclusion in operating and maintenance manuals.
  - 4. Provide reports in soft cover, letter size, 3-ring binder manuals, complete with index page and indexing tabs, with cover identification at front and side. Include set of reduced drawings with air outlets and equipment identified to correspond with data sheets, and indicating thermostat locations.
  - 5. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
  - 6. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.
  - 7. Units of Measure: Report data in I-P (inch-pound) units only.

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8. Include the following on the title page of each report:
  - a. Name of Testing, Adjusting, and Balancing Agency.
  - b. Address of Testing, Adjusting, and Balancing Agency.
  - c. Telephone number of Testing, Adjusting, and Balancing Agency.
  - d. Project name.
  - e. Project location.
  - f. Project Architect.
  - g. Project Engineer.
  - h. Project Contractor.
  - i. Project altitude.
  - j. Report date.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

- A. Perform total system balance in accordance with one of the following:
  1. AABC MN-1, AABC National Standards for Total System Balance.
  2. ASHRAE Std 111, Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning, and Refrigeration Systems.
  3. NEBB Procedural Standards for Testing Adjusting Balancing of Environmental Systems.
  4. SMACNA HVAC Systems Testing, Adjusting, and Balancing.
  5. Maintain at least one copy of the standard to be used at project site at all times.
- B. Where HVAC systems and/or components interface with life safety systems, including fire and smoke detection, alarm, and control, coordinate scheduling and testing and inspection procedures with the authorities having jurisdiction.
  1. Having minimum of two years documented experience.
  2. Certified by one of the following agencies or methods:
    - a. NEBB, National Environmental Balancing Bureau: [www.nebb.org/#sle](http://www.nebb.org/#sle).

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- b. Test and Balance under direct supervision of a Professional Engineer registered in the State of Arkansas.
- C. TAB Supervisor and Technician Qualifications: Certified by same organization as TAB agency.
- D. Acceptable TAB Agencies:
  - 1. NEBB.
  - 2. AABC.
  - 3. SMACNA.
  - 4. TABB.
  - 5. Substitutions: Not permitted.

### 3.2 EXAMINATION

- A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
  - 1. Systems are started and operating in a safe and normal condition.
  - 2. Temperature control systems are installed complete and operable.
  - 3. Proper thermal overload protection is in place for electrical equipment.
  - 4. Final filters are clean and in place. If required, install temporary media in addition to final filters.
  - 5. Duct systems are clean of debris.
  - 6. Access doors are closed and duct end caps are in place.
  - 7. Air outlets are installed and connected.
  - 8. Duct system leakage is minimized.
  - 9. Service and balance valves are open.
- B. Submit field reports. Report defects and deficiencies that will or could prevent proper system balance.
- C. Beginning of work means acceptance of existing conditions. Since work will occur in phases, provide listing of system deficiencies for systems to be balanced during the specified phases.

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### 3.3 PREPARATION

- A. Hold a pre-balancing meeting at least one week prior to starting TAB work.
  - 1. Require attendance by all installers whose work will be tested, adjusted, or balanced.
- B. Provide instruments required for testing, adjusting, and balancing operations. Make instruments available to Architect to facilitate spot checks during testing.
- C. Provide additional balancing devices as required.

### 3.4 ADJUSTMENT TOLERANCES

- A. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 5 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

### 3.5 RECORDING AND ADJUSTING

- A. Field Logs: Maintain written logs including:
  - 1. Running log of events and issues.
  - 2. Discrepancies, deficient or uncompleted work by others.
  - 3. Contract interpretation requests.
  - 4. Lists of completed tests.
- B. Ensure recorded data represents actual measured or observed conditions.
- C. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.
- D. Mark on drawings the locations where traverse and other critical measurements were taken and cross reference the location in the final report.
- E. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.
- F. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.
- G. At final inspection, recheck random selections of data recorded in report. Recheck points or areas as selected and witnessed by the Owner.



- H. Check and adjust systems approximately six months after final acceptance and submit report.
- I. After all adjustments and corrections have been performed to balance system as designed, additional readjustment shall be performed to satisfy desired temperature.

### 3.6 AIR SYSTEM PROCEDURE

- A. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.
- B. Measure air quantities at air inlets and outlets.
- C. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.
- D. Use volume control devices to regulate air quantities only to extend that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.
- E. Vary total system air quantities by adjustment of fan speeds. Provide drive changes required. Vary branch air quantities by damper regulation.
- F. Provide system schematic with required and actual air quantities recorded at each outlet or inlet.
- G. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across the fan. Make allowances for 50 percent loading of filters.
- H. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.
- I. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.
- J. Where modulating dampers are provided, take measurements and balance at extreme conditions.
- K. Measure building static pressure and adjust supply, return, barometric relief dampers, and exhaust air systems to provide required relationship between each to maintain approximately 0.05 inches positive static pressure near the building entries.
- L. Measure and record supply, return, outside and exhaust air cfm, fan rpm, motor amps, coil entering and leaving air, temperatures (both wet and dry bulb temperatures), outside air (wet and dry bulb temperatures) for cooling and heating operations, system

static pressures shall be measured at the required conditions at the minimum and maximum fan speeds.

M. Measure and record the following air handling and distribution systems.

1. Supply, return, outside air and exhaust when system is in the economizer operation. Measure and record supply air and outside air temperatures (both wet and dry bulb).

### 3.7 SCOPE

A. Test, adjust, and balance the following:

1. Air Inlets and Outlets.

### 3.8 MINIMUM DATA TO BE REPORTED

A. Return Air/Outside Air:

1. Identification/location
2. Design air flow
3. Actual air flow
4. Design return air flow
5. Actual return air flow
6. Design outside air flow
7. Actual outside air flow
8. Return air temperature
9. Outside air temperature
10. Required mixed air temperature
11. Actual mixed air temperature
12. Design outside/return air ratio
13. Actual outside/return air ratio

B. Duct Traverses:

1. System zone/branch

2. Duct size
3. Area
4. Design velocity
5. Design air flow
6. Test velocity
7. Test air flow
8. Duct static pressure
9. Air temperature
10. Air correction factor

C. Air Distribution Tests:

1. Air terminal number
2. Room number/location
3. Terminal type
4. Terminal size
5. Area factor
6. Design velocity
7. Design air flow
8. Test (final) velocity
9. Test (final) air flow
10. Percent of design air flow

END OF SECTION

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## SECTION 23 07 13

### DUCT INSULATION

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Duct insulation.
- B. Duct Liner.
- C. Insulation jackets.
- D. Adhesive, tie wires, tape

##### 1.2 RELATED REQUIREMENTS

- A. Section 23 01 00 - General HVAC Provisions.
- B. Section 23 05 53 - Identification for HVAC Piping and Equipment.
- C. Section 23 31 00 - Ducts: Glass fiber ducts.

##### 1.3 REFERENCE STANDARDS

- A. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- B. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2014.
- C. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications; 2013 (Reapproved 2019).
- D. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation; 2014 (Reapproved 2019).
- E. ASTM C916 - Standard Specification for Adhesives for Duct Thermal Insulation; 2020.
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- G. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2023.

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- H. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015.
- I. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials; National Fire Protection Association; 2006.
- J. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2020.
- K. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

#### 1.4 SUBMITTALS

- A. See Section 23 01 00 - General HVAC Provisions, for submittal procedures.
- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.
- C. Manufacturer's Instructions: Indicate installation procedures necessary to ensure acceptable workmanship and that installation standards will be achieved.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section with not less than five years of documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified in this section with a minimum five years of documented experience and approved by manufacturer.
- C. Perform work at ambient and equivalent temperatures as recommended by the adhesive manufacturer. Work shall be performed only by mechanics who regularly perform this type of work only.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labelled with manufacturer's identification, including product density and thickness.
- B. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

#### 1.7 FIELD CONDITIONS

- A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.

- B. Maintain temperature during and after installation for minimum period of 24 hours.

## PART 2 PRODUCTS

### 2.1 REQUIREMENTS FOR ALL PRODUCTS OF THIS SECTION

- A. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84, NFPA 255, or UL 723.
- B. Adhesives to be waterproof.
- C. Recovering jackets 6 ounce per square yard canvas attached with a lagging fire retardant adhesive. Install on exposed ductwork insulation. Cover thoroughly with several coats of sizing.

### 2.2 GLASS FIBER, FLEXIBLE

- A. Manufacturer:
  - 1. Knauf Insulation.
  - 2. Johns Manville Corporation.
  - 3. Owens Corning Corp.
  - 4. CertainTeed Corporation.
  - 5. Substitutions: See Section 23 01 00 - General HVAC Provisions.
- B. Insulation: ASTM C553; flexible, noncombustible blanket.
  - 1. 'K' value: 0.36 at 75 degrees F, when tested in accordance with ASTM C518.
  - 2. Maximum Service Temperature: 450 degrees F.
  - 3. Maximum Water Vapor Sorption: 5.0 percent by weight.
  - 4. Maximum Moisture Absorption: 0.20 percent by volume.
- C. Vapor Barrier Jacket:
  - 1. Kraft paper with glass fiber yarn and bonded to aluminized film.
  - 2. Moisture Vapor Permeability: 0.02 perm inch, when tested in accordance with ASTM E 96/E 96M.
  - 3. Moisture Vapor Transmission: ASTM E 96; 0.02 perm.
  - 4. Secure with pressure sensitive tape.

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D. Vapor Barrier Tape:

1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.

E. Outdoor Vapor Barrier Mastic:

1. Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.

F. Tie Wire: Annealed steel, 16 gage.

2.3 GLASS FIBER, RIGID

A. Manufacturer:

1. Knauf Insulation.
2. Johns Manville Corporation.
3. Owens Corning Corp.
4. CertainTeed Corporation.
5. Substitutions: See Section 23 01 00 - General HVAC Provisions.

B. Insulation: ASTM C612; rigid, noncombustible blanket.

1. 'K' value: 0.24 at 75 degrees F, when tested in accordance with ASTM C518.
2. Maximum service temperature: 450 degrees F.
3. Maximum Water Vapor Sorption: 5.0 percent.
4. Maximum Moisture Absorption: 0.20 percent by volume.
5. Maximum Density: 8.0 lb/cu ft.
6. Density: 3.0 lb/cu ft.

C. Vapor Barrier Jacket:

1. Kraft paper with glass fiber yarn and bonded to aluminized film.
2. Moisture Vapor Permeability: 0.02 perm inch, when tested in accordance with ASTM E 96/E 96M.
3. Moisture vapor transmission: ASTM E 96; 0.04 perm.
4. Secure with pressure sensitive tape.

D. Vapor Barrier Tape:

1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.

E. Indoor Vapor Barrier Finish:

1. Cloth: Untreated; 9 oz/sq yd weight, glass fabric.
2. Vinyl emulsion type acrylic, compatible with insulation, white color.

## 2.4 JACKETS

A. Canvas Jacket: UL listed 6 oz/sq yd plain weave cotton fabric treated with dilute fire retardant lagging adhesive.

1. Lagging Adhesive:

- a. Compatible with insulation.

B. Mineral Fiber (Outdoor) Jacket: Asphalt impregnated and coated sheet, 50 lb/square.

C. Aluminum Jacket: ASTM B209 (ASTM B209M).

1. Thickness: 0.016 inch sheet.
2. Finish: Embossed.
3. Joining: Longitudinal slip joints and 2 inch laps.
4. Fittings: 0.016 inch thick die shaped fitting covers with factory attached protective liner.
5. Metal Jacket Bands: 3/8 inch wide; 0.015 inch thick aluminum.

## 2.5 DUCT LINER

A. Manufacturers:

1. Knauf Insulation.
2. Johns Manville Corporation.
3. Owens Corning Corp.
4. CertainTeed Corporation.

B. Insulation: Non-corrosive, incombustible glass fiber complying with ASTM C1071; semi-rigid duct liner; impregnated surface and edges coated with poly vinyl acetate

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polymer, acrylic polymer, or black composite.

1. Fungi Resistance: ASTM G21.
  2. Substitutions: See Section 23 01 00 - General HVAC Provisions.
  3. Apparent Thermal Conductivity: Maximum of 0.31 at 75 degrees F.
  4. Service Temperature: Up to 250 degrees F.
  5. Rated Velocity on Coated Air Side for Air Erosion: 5,000 fpm, minimum.
  6. Minimum Noise Reduction Coefficients:
    - a. 1/2 inch Thickness: 0.30.
    - b. 1 inch Thickness: 0.45.
    - c. 1-1/2 inches Thickness: 0.60.
    - d. 2 inch Thickness: 0.70.
- C. Adhesive: Waterproof, fire-retardant type, ASTM C916.
- D. Liner Fasteners: Galvanized steel, welded with press-on head.

## 2.6 MATERIALS

### A. External Insulation

1. Concealed Round Ducts: Flexible glass fiber insulation, minimum installed R-value of R-6, with factory applied reinforced aluminum foil vapor barrier for systems conveying air at less than room temperature.

### B. Internal Insulation

1. Rectangular Ducts and Plenums: Internal duct insulation shall be semi-rigid duct liner board manufactured from glass fibers bonded with a thermosetting resin. Insulation shall be coated on one side with a fire resistant black coating and shall have a minimum installed R-value of R-6. Duct liner shall be installed by cutting side pieces of insulation to lap both top and bottom sections for maximum support. Install side pieces first. Side pieces and bottom piece shall be attached with 4" strips of adhesive at one foot intervals. Top section of insulation shall be attached with Stick-Klip fasteners secured by Miracle adhesive spaced one fastener per two square feet of insulation. Edges of insulation shall be butted with adhesive to insure a tight joint and provide a smooth surface.

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## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that ducts have been tested before applying insulation materials.
- B. Verify that surfaces are clean, foreign material removed, and dry.
- C. Finish with system at ambient conditions.

### 3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with NAIMA National Insulation Standards.
- C. Insulated ducts conveying air below ambient temperature:
  - 1. Provide insulation with vapor barrier jackets.
  - 2. Finish with tape and vapor barrier jacket.
  - 3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
  - 4. Insulate entire system including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.
- D. Insulated ducts conveying air above ambient temperature:
  - 1. Provide with or without standard vapor barrier jacket.
  - 2. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.
- E. Ducts Exposed in Mechanical Equipment Rooms or Finished Spaces : Finish with canvas jacket sized for finish painting.
- F. External Duct Insulation Application:
  - 1. Secure insulation with vapor barrier with wires and seal jacket joints with vapor barrier adhesive or tape to match jacket.
  - 2. Secure insulation without vapor barrier with staples, tape, or wires.
  - 3. Install without sag on underside of duct. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift duct off trapeze hangers and insert spacers.

4. Seal vapor barrier penetrations by mechanical fasteners with vapor barrier adhesive.
5. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.

G. Duct and Plenum Liner Application:

1. Adhere insulation with adhesive for 100 percent coverage.
2. Secure insulation with welded mechanical liner fasteners. Refer to SMACNA HVAC Duct Construction Standards - Metal and Flexible and NAIMA Fibrous Glass Duct Liner Standards (latest edition) for spacing.
3. Seal and smooth joints. Seal and coat transverse joints.
4. Seal liner surface penetrations with adhesive.
5. Duct dimensions indicated are net inside dimensions required for air flow. Increase duct size to allow for insulation thickness.

### 3.3 SCHEDULES

A. Exhaust Ducts: Externally wrap.

B. Outside Air Intake Ducts:

1. Round: Externally insulate with 2-inch thick insulation, minimum installed R-value of R-6.
2. Rectangular: Internally insulate with 1-inch thick semi-rigid duct liner with adhesive and welded mechanical fasteners, minimum installed R-value of R-6.

C. Plenums: Internally insulate with 1-inch thick insulation, minimum installed R-value of R-6.

D. Concealed Supply Ducts:

1. Round Duct: Externally insulate with 2-inch thick insulation, minimum installed R-value of R-6.
2. Rectangular: Internally insulate with 1-inch thick, semi-rigid duct liner, minimum installed R-value of R-6, with adhesive and welded mechanical fasteners.

E. Concealed Return Air Ducts and Plenums:

1. Round: Externally insulate with 2-inch thick insulation, minimum installed R-value of R-6.
2. Rectangular: Internally insulate with 1-inch thick, minimum installed R-value of R-6, semi-rigid duct liner with adhesive and welded mechanical fasteners.
3. Plenums: Internally insulate with 1-inch thick, minimum installed R-value of R-6, semi-rigid duct liner with adhesive and welded mechanical fasteners.

END OF SECTION

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Washington County  
Sheriff's Office Interior Remodel  
Fayetteville, Arkansas

## SECTION 23 31 00

### DUCTS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Metal ductwork.
- B. Duct cleaning.

##### 1.2 RELATED REQUIREMENTS

- A. Section 23 07 13 - Duct Insulation: External insulation and duct liner.
- B. Section 23 33 00 - Duct Accessories.
- C. Section 23 33 30 - Air Duct Sealants.
- D. Section 23 37 00 - Air Outlets and Inlets.
- E. Section 23 05 93 - Testing, Adjusting, and Balancing.

##### 1.3 REFERENCE STANDARDS

- A. ASHRAE (FUND) - ASHRAE Handbook - Fundamentals; Most Recent Edition Cited by Referring Code or Reference Standard.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- C. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications; 2015b.
- D. ASTM A480/A480M - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip; 2015.
- E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.
- F. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.

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- G. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- H. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2014.
- I. ASTM C14M - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe (Metric).; 2020.
- J. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- K. ICC-ES AC01 - Acceptance Criteria for Expansion Anchors in Masonry Elements; 2018, with Editorial Revision (2020).
- L. ICC-ES AC106 - Acceptance Criteria for Predrilled Fasteners (Screw Anchors) in Masonry; 2018, with Editorial Revision (2020).
- M. ICC-ES AC193 - Acceptance Criteria for Mechanical Anchors in Concrete Elements; 2017, with Editorial Revision (2020).
- N. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2015.
- O. NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems; 2015.
- P. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2020.

#### 1.4 DEFINITIONS

- A. Duct Sizes: Duct sizes indicated on drawings are inside clear dimensions.
- B. Low Pressure: Static pressure in duct less than 1" WG and velocities less than 2000 fpm (10 meters/second).

#### 1.5 SUBMITTALS

- A. See Section 23 01 00 - General HVAC Provisions, for submittal procedures.
- B. Product Data: Provide data for duct materials, duct liner, and duct connections.
- C. Shop Drawings: Indicate duct fittings, particulars such as gages, sizes, welds, and configuration prior to start of work for all systems.
- D. Project Record Documents: Record actual locations of ducts and duct fittings. Record changes in fitting location and type. Show additional fittings used.

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- E. Confirm ductwork has been fabricated and installed in accordance with recommendations and SMACNA standards.

## 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum five years of documented experience.
- B. Installer Qualifications: Company specializing in performing the type of work specified in this section, with minimum five years of documented experience.

## 1.7 REGULATORY REQUIREMENTS

- A. Construct ductwork to NFPA 90A and NFPA 90B, standards.

## 1.8 FIELD CONDITIONS

- A. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.
- B. Maintain temperatures within acceptable range during and after installation of duct sealants.

# PART 2 PRODUCTS

## 2.1 MATERIALS

- A. Galvanized Steel for Ducts: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G90/Z275 coating.
- B. Aluminum for Ducts: ASTM B209 (ASTM B209M); aluminum sheet, alloy 3003-H14. Aluminum Connectors and Bar Stock: Alloy 6061-T651 or of equivalent strength.
- C. Stainless Steel for Ducts: ASTM A 240/A 240M, Type 316.
- D. Joint Sealers and Sealants: Non-hardening, water resistant, mildew and mold resistant.
  - 1. Type: Heavy mastic or liquid used alone or with tape, suitable for joint configuration and compatible with substrates, and recommended by manufacturer for pressure class of ducts.
  - 2. VOC Content: Not more than 250 g/L, excluding water.
  - 3. Surface Burning Characteristics: Flame spread of zero, smoke developed of zero, when tested in accordance with ASTM E84.

- 4. For Use With Flexible Ducts: UL labeled.
- 5. Products:
  - a. Seal all joints and seams on sheet metal supply, return, makeup air and exhaust ductwork with "Hardcast" type DT sealing tape and type FTA adhesive or "Hardcast" iron grip 601 duct sealant installed in strict accordance with manufacturer's instructions. Clean all dirt, oil, moisture, etc., before applying adhesive. Duct tape, UL listed or not, is not acceptable.
  - b. Substitutions: See Section 23 01 00 - General HVAC Provisions.
- E. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.
- F. Hanger Fasteners: Attach hangers to structure using appropriate fasteners, as follows:
  - 1. Concrete Wedge Expansion Anchors: Complying with ICC-ES AC193.
  - 2. Masonry Wedge Expansion Anchors: Complying with ICC-ES AC01.
  - 3. Concrete Screw Type Anchors: Complying with ICC-ES AC193.
  - 4. Masonry Screw Type Anchors: Complying with ICC-ES AC106.
  - 5. Other Types: As required.

## 2.2 DUCT ASSEMBLIES

- A. All Ducts: Galvanized steel, unless otherwise indicated.
- B. Low Pressure Supply (Heating Systems): 1 inch w.g. pressure class, galvanized steel.
- C. Return and Relief: 1 inch w.g. pressure class, galvanized steel.
- D. General Exhaust: 1 inch w.g. pressure class, galvanized steel.
- E. Outside Air Intake: 1 inch w.g. pressure class, galvanized steel.

## 2.3 DUCTWORK FABRICATION

- A. Fabricate and support in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated.
- B. No variation of duct configuration or size permitted except by written permission. Size round duct installed in place of rectangular ducts in accordance with ASHRAE Handbook - Fundamentals.



- C. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- D. Provide air foil turning vanes when rectangular elbows must be used.
- E. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
- F. Fabricate continuously welded round and oval duct fittings two gages heavier than duct gages indicated in SMACNA Standard. Joints shall be minimum 4 inch cemented slip joint, brazed or electric welded. Prime coat welded joints.
- G. Provide standard 45 degree lateral wye takeoffs unless otherwise indicated where 90 degree conical tee connections may be used.
- H. Lap metal duct in direction of air flow. Hammer down edges and slips to leave smooth duct interior.
- I. Where ducts are connected to exterior wall louvers and duct outlet is smaller than louver frame, provide duct transition to louver area. Use same material as duct, painted black on exterior side; seal to louver frame and duct.
- J. Size round ducts installed in place of rectangular ducts from ASHRAE Table of Equivalent Rectangular and Round Ducts. No variation of duct configuration or sizes permitted except by written permission.
- K. Rigidly construct metal ducts with joints mechanically tight, substantially airtight, braced and stiffened so as not to breathe, rattle, vibrate or sag. Caulk duct joints and connections with sealant as ducts are being assembled.

## 2.4 MANUFACTURED DUCTWORK AND FITTINGS

- A. Flexible Ducts: Two ply vinyl film supported by helically wound spring steel wire.
  - 1. Insulation: Fiberglass insulation with aluminized fiberglass scrim vapor barrier film.
  - 2. Pressure Rating: 6 inches WG positive and 1.0 inches WG negative.
  - 3. Maximum Velocity: 5000 fpm.
  - 4. Temperature Range: -10 degrees F to 160 degrees F.
  - 5. R-6.0 Formaldehyde free insulation.
  - 6. UL -181 (UL listed).

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7. Manufacturers:

- a. Hart & Cooley.
- b. Flex Master.
- c. Substitutions: See Section 23 01 00 - General HVAC Provisions.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install, support, and seal ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.
- B. Install in accordance with manufacturer's instructions.
- C. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
- D. Flexible Ducts: Connect to metal ducts with draw bands.
- E. Duct sizes indicated are inside clear dimensions. For lined ducts, maintain sizes inside lining.
- F. Provide openings in ductwork where required to accommodate thermometers and controllers. Provide pilot tube openings where required for testing of systems, complete with metal can with spring device or screw to ensure against air leakage. Where openings are provided in insulated ductwork, install insulation material inside a metal ring.
- G. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.
- H. Use crimp joints with or without bead for joining round duct sizes 8 inch and smaller with crimp in direction of air flow.
- I. Use double nuts and lock washers on threaded rod supports.
- J. Connect diffusers or light troffer boots to low pressure ducts directly or with 5 feet maximum length of flexible duct held in place with strap or clamp.
- K. Connect flexible ducts to metal ducts per manufacturer's recommendations.
- L. All round and rectangular duct installed in exposed areas shall be paint lock duct.

### 3.2 CLEANING

- A. If determined by the Architect and/or Engineer, that during construction the duct systems were not adequately protected and dirt/debris was allowed to enter the installed ductwork, then it will be required by the HVAC contractor for the duct system to be cleaned. If required, clean duct systems with high power vacuum machines. Protect equipment that could be harmed by excessive dirt with filters, or bypass during cleaning. Provide adequate access into ductwork for cleaning purposes.

END OF SECTION

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## SECTION 23 33 00

### DUCT ACCESSORIES

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Backdraft dampers - metal.
- B. Duct access doors.
- C. Duct test holes.
- D. Fire dampers.
- E. Flexible duct connections.

##### 1.2 RELATED REQUIREMENTS

- A. Section 23 31 00 - Ducts.
- B. Division 26 - Electrical: Electrical characteristics and wiring connections.

##### 1.3 REFERENCE STANDARDS

- A. AMCA 500-D - Laboratory Methods of Testing Dampers for Rating; 2018.
- B. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2015.
- C. NFPA 92 - Standard for Smoke Control Systems; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2020.
- E. UL 94 - Tests for Flammability of Plastic Materials for Parts in Devices and Appliances; Current Edition, Including All Revisions.
- F. UL 263 - Standard for Fire Tests of Building Construction and Materials; Current Edition, Including All Revisions.
- G. UL 555 - Standard for Fire Dampers; Current Edition, Including All Revisions.
- H. UL 555C - Standard for Safety Ceiling Dampers; Current Edition, Including All Revisions.

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- I. UL 555S - Standard for Smoke Dampers; Current Edition, Including All Revisions.

#### 1.4 SUBMITTALS

- A. See Section 23 01 00 - General HVAC Provisions, for submittal procedures.
- B. Project Record Drawings: Record actual locations of access doors, access doors, test holes, and fire dampers.
- C. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. Extra Fusible Links: Two of each type and size.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum five years of documented experience.
- B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
- C. Demonstrate resetting of fire dampers to authorities having jurisdiction and Owner's Representative.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect dampers from damage to operating linkages and blades.

### PART 2 PRODUCTS

#### 2.1 AIR TURNING DEVICES/EXTRACTORS

- A. Manufacturers:
  - 1. Krueger.
  - 2. PCI Industries, Inc; Pottorff Brand.
  - 3. Ruskin Company.
  - 4. Titus.
  - 5. Substitutions: See Section 23 01 00 - General HVAC Provisions.
- B. Multi-blade device with blades aligned in short dimension; steel construction; with individually adjustable blades, mounting straps.

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- C. Multi-blade device with radius blades attached to pivoting frame and bracket, steel construction, with worm drive mechanism with removable key operator.

## 2.2 BACKDRAFT DAMPERS - METAL

- A. Manufacturers:
  - 1. Louvers & Dampers, Inc.
  - 2. Nailor Industries Inc.
  - 3. PCI Industries, Inc; Pottorff Brand.
  - 4. Ruskin Company.
  - 5. United Enertech.
  - 6. Substitutions: See Section 23 01 00 - General HVAC Provisions.
- B. Gravity Backdraft Dampers, Size 18 x 18 inches or Smaller, Furnished with Air Moving Equipment: Air moving equipment manufacturer's standard construction.
- C. Multi-Blade, Parallel Action Gravity Balanced Backdraft Dampers: Galvanized steel, with center pivoted blades of maximum 6 inch width, with felt or flexible vinyl sealed edges, linked together in rattle-free manner with 90 degree stop, steel ball bearings, and plated steel pivot pin; adjustment device to permit setting for varying differential static pressure.

## 2.3 DUCT ACCESS DOORS

- A. Manufacturers:
  - 1. Nailor Industries Inc.
  - 2. Ruskin Company.
  - 3. Greenheck Fan Corporation.
  - 4. SEMCO Incorporated.
  - 5. Substitutions: See Section 23 01 00 - General HVAC Provisions.
- B. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated.
- C. Fabrication: Rigid and close-fitting of galvanized steel with sealing gaskets and quick fastening locking devices. For insulated ducts, install minimum 1 inch thick insulation with sheet metal cover.

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1. Less Than 12 inches Square: Secure with sash locks.
  2. Up to 18 inches Square: Provide two hinges and two sash locks.
  3. Up to 24 x 48 inches: Three hinges and two compression latches with outside and inside handles.
  4. Larger Sizes: Provide an additional hinge.
- D. Access doors with sheet metal screw fasteners are not acceptable.

## 2.4 DUCT TEST HOLES

- A. Temporary Test Holes: Cut or drill in ducts as required. Cap with neat patches, neoprene plugs, threaded plugs, or threaded or twist-on metal caps.
- B. Permanent Test Holes: Factory fabricated, air tight flanged fittings with screw cap. Provide extended neck fittings to clear insulation.

## 2.5 FIRE DAMPERS

- A. Manufacturers:
  1. Louvers & Dampers, Inc.
  2. Nailor Industries Inc.
  3. Ruskin Company.
  4. Greenheck Fan Corporation.
  5. United Enertech.
  6. Substitutions: See Section 23 01 00 - General HVAC Provisions.
- B. Fabricate in accordance with NFPA 90A and UL 555, and as indicated.
- C. Ceiling Dampers: Galvanized steel, 22 gage frame and 16 gage flap, two layers 0.125 inch ceramic fiber on top side and one layer on bottom side for round flaps, with locking clip.
- D. Horizontal Dampers: Galvanized steel, 22 gage frame, stainless steel closure spring, and lightweight, heat retardant non-asbestos fabric blanket.
- E. Multiple Blade Dampers: 16 gage galvanized steel frame and blades, oil-impregnated bronze or stainless steel sleeve bearings and plated steel axles, 1/8 x 1/2 inch plated steel concealed linkage, stainless steel closure spring, blade stops, and lock.

- F. Curtain Type Dampers: Galvanized steel with interlocking blades. Provide dynamic style dampers with stainless steel closure springs and latches for closure under air flow conditions. Configure with blades out of air stream.
- G. Fusible Links: UL 33, separate at 160 degrees F with adjustable link straps for combination fire/balancing dampers.

## 2.6 FLEXIBLE DUCT CONNECTIONS

- A. Manufacturers:
- B. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated.
- C. Connector: Fabric crimped into metal edging strip.
  - 1. Fabric: UL listed fire-retardant neoprene coated woven glass fiber fabric to NFPA 90A, minimum density 30 oz per sq yd.
    - a. Net Fabric Width: Approximately 3 inches wide.
  - 2. Metal: 3 inches wide, 24 gage thick galvanized steel.

## PART 3 EXECUTION

### 3.1 PREPARATION

- A. Verify that electric power is available and of the correct characteristics.

### 3.2 INSTALLATION

- A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA HVAC Duct Construction Standards - Metal and Flexible. Refer to Section 23 31 00 for duct construction and pressure class.
- B. Provide backdraft dampers on exhaust fans or exhaust ducts nearest to outside and where indicated.
- C. Provide duct access doors for inspection and cleaning before and after filters, coils, fans, automatic dampers, at fire dampers, combination fire and smoke dampers, and elsewhere as indicated. Provide minimum 8 x 8 inch size for hand access, size for shoulder access, and as indicated. Provide 4 x 4 inch for balancing dampers only. Review locations prior to fabrication.
- D. Provide duct test holes where indicated and required for testing and balancing purposes.

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- E. Provide fire and smoke at locations indicated, where ducts and outlets pass through fire rated components, and where required by authorities having jurisdiction. Install with required perimeter mounting angles, sleeves, breakaway duct connections, corrosion resistant springs, bearings, bushings and hinges.
- F. Install smoke dampers and combination smoke and fire dampers in accordance with NFPA 92.
- G. Demonstrate re-setting of fire dampers to Owner's representative.
- H. At fans and motorized equipment associated with ducts, provide flexible duct connections immediately adjacent to the equipment.
- I. At equipment supported by vibration isolators, provide flexible duct connections immediately adjacent to the equipment.
- J. Provide balancing dampers at points on supply, return, and exhaust systems where branches are taken from larger ducts as required for air balancing. Install minimum 2 duct widths from duct take-off.
- K. Provide balancing dampers on duct take-off to diffusers, grilles, and registers, regardless of whether dampers are specified as part of the diffuser, grille, or register assembly.

END OF SECTION

## SECTION 23 37 00

### AIR OUTLETS AND INLETS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Diffusers.
- B. Registers/grilles.
  - 1. Ceiling-mounted, exhaust and return register/grilles.
  - 2. Wall-mounted, exhaust and return register/grilles.
  - 3. Wall-mounted, grid core exhaust and return register/grilles.
- C. Louvers.

##### 1.2 REFERENCE STANDARDS

- A. AHRI 880 (I-P) - Performance Rating of Air Terminals; 2017 (Reaffirmed 2023).
- B. AMCA 500-L - Laboratory Methods of Testing Louvers for Rating; 2023.
- C. ASHRAE Std 70 - Method of Testing the Performance of Air Outlets and Air Inlets; 2023.

##### 1.3 SUBMITTALS

- A. See Section 23 01 00 - General HVAC Provisions, for submittal procedures.
- B. Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.
- C. Project Record Documents: Record actual locations of air outlets and inlets.

##### 1.4 QUALITY ASSURANCE

- A. Test and rate air outlet and inlet performance in accordance with ASHRAE Std 70.
- B. Test and rate louver performance in accordance with AMCA 500-L.

## 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum five years of documented experience.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Air Devices, Inc.
- B. Carnes Company HVAC.
- C. Greenheck.
- D. Krueger.
- E. Nailor.
- F. Price Industries.
- G. Ruskin.
- H. Titus.
- I. Tuttle-Bailey.
- J. United Enertech.
- K. Substitutions: See Section 23 01 00 - General HVAC Provisions.

### 2.2 SQUARE CEILING DIFFUSERS

- A. Type: Provide high performance 3-cone diffuser diffuser to discharge air in 360 degree pattern .
- B. Frame: inverted T-Bar type. In plaster ceilings, provide plaster frame and ceiling frame.
- C. Fabrication: Steel or aluminum as indicated on drawings with baked enamel finish.
- D. Color: As shown on drawings.
- E. See Air Distribution Schedule on drawings for details and accessories.

### 2.3 CEILING RETURN REGISTERS/GRILLES

- A. Type: Streamlined blades, 1/2" inch minimum depth, 1/2" inch maximum spacing, with blades set at 45 degrees, horizontal face.

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- B. Frame: Surface mount, inverted T-Bar type. In plaster ceilings, provide plaster frame and ceiling frame.
- C. Fabrication: Steel or aluminum as indicated on drawings with baked enamel finish.
- D. Color: As shown on the drawings.
- E. Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face where not individually connected to exhaust fans, where indicated on plans.
- F. See Air Distribution Schedule on drawings for details and accessories.

#### 2.4 CEILING GRID CORE EXHAUST REGISTERS/GRILLES

- A. Type: Fixed grilles of 1/2 x 1/2 x 1/2 inch louvers.
- B. Fabrication: Aluminum with factory baked enamel finish.
- C. Frame: Channel lay-in frame for suspended grid ceilings.
- D. Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face, where indicated on plans.
- E. See Air Distribution Schedule on drawings for details and accessories.

#### 2.5 SUPPLY MINIMUM SECURITY GRILLE

- A. Type: 12 galvanized steel face plate with 13"/16" square holes and 3/16" fret bar with one, two, three, or four way blow pattern.
- B. Frame: Rear mounted.
- C. Color: As shown on the drawings.
- D. Damper: AG-35 duct mounted opposed blade damper.

#### 2.6 SUPPLY MAXIMUM SECURITY GRILLE

- A. Type: Welded construction, 3/16 inch steel face plate with 5/16 inch diameter holes on 7/16 inch staggered centers and 1 inch border.
- B. Frame: Optional mounting frame.
- C. Fabrication: Steel.
- D. Color: As shown on the drawings.

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- E. Damper: Face Operated Damper or Rear Operated Damper: AG-15 steel opposed blade damper. Slot operate from face and rear of the grille.

## 2.7 WALL SUPPLY REGISTERS/GRILLES

- A. Type: Streamlined and individually adjustable blades, 3/4 inch minimum depth, 1/4 inch maximum spacing with spring or other device to set blades, vertical face, double deflection.
- B. Frame: 1-1/4 inch margin with countersunk screw mounting and gasket.
- C. Fabrication: Steel with 20 gage minimum frames and 22 gage minimum blades, steel and aluminum with 20 gage minimum frame, or aluminum extrusions, with factory baked enamel finish.
- D. Color: As shown on the drawings.
- E. Damper: Integral, gang-operated opposed blade type with removable key operator, operable from face, where indicated on plans.
- F. See Air Distribution Schedule on drawings for details and accessories.

## 2.8 RETURN/EXHAUST SECURITY GRILLE

- A. Type: Welded construction, 3/16 inch steel face plate with 5/16 inch diameter holes on 7/16 inch staggered centers and 1 inch border.
- B. Frame: Optional mounting frame.
- C. Fabrication: Steel.
- D. Color: As shown on the drawings.
- E. Damper: Face Operated Damper or Rear Operated Damper: AG-5 steel opposed blade damper. Slot operate from face and rear of the grille.

## 2.9 LOUVERS

- A. Type: 4 inch dee[ channel style with 0.081 inch extruded aluminum wall thickness, blades on 37 and 45 degree angles with 0.081 inch extruded aluminum wall thickness.
- B. Color: As shown on the drawings.
- C. Fabrication: 12 gage thick extruded aluminum, welded assembly, with finish as indicated on Louver Schedule.
- D. Mounting: Furnish with standard frame and extended sill for installation.

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## 2.10 COUNTER BALANCED BACKDRAFT DAMPERS

- A. Frame shall be 0.90 inch minimum wall thickness extruded aluminum with 12 gage galvanized steel structural brace at each corner.
- B. Blades shall be 0.025 inch minimum roll-formed aluminum with extruded vinyl blade edge seals mechanically locked into the blades.
- C. Blades shall include field adjustable, zinc plated steel counter balance weights to allow pressure relief at less than .05 inches water gage.
- D. Bearings shall be corrosive resistant, long life synthetic type for quiet operation.
- E. Linkage shall be 1/2 inch wide tiebar concealed in the frame.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Check location of outlets and inlets and make necessary adjustments in position to conform with architectural features, symmetry, and lighting arrangement.
- C. Install diffusers to ductwork with air tight connection.
- D. Provide balancing dampers on duct take-off to diffusers, and grilles and registers, despite whether dampers are specified as part of the diffuser, or grille and register assembly.
- E. Paint ductwork visible behind air outlets and inlets matte black.
- F. Provide minimum 6" deep plenum box on back of all return and exhaust grilles.
- G. Install counter balanced backdraft dampers where indicated on the plans.

### 3.2 SCHEDULES

- A. Air Outlet and Inlet Schedule
  - 1. Drawing Code: Refer to plan schedule.
  - 2. Manufacturer: As scheduled on drawings.
  - 3. Model: As scheduled on drawings.
  - 4. Description: As scheduled on drawings.

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5. Finish: As scheduled on drawings.
6. Service: As scheduled on drawings.
7. Mounting: As scheduled on drawings.
8. Accessories: As scheduled on drawings.

END OF SECTION

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Washington County  
Sheriff's Office Interior Remodel  
Fayetteville, Arkansas

## SECTION 23 40 00

### AIR CLEANING DEVICES

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Disposable, extended area panel filters.

##### 1.2 RELATED REQUIREMENTS

- A. Division 26 - Electrical: Electrical characteristics and wiring connections.

##### 1.3 REFERENCE STANDARDS

- A. AHRI 850 (I-P) - Performance Rating of Commercial and Industrial Air Filter Equipment; 2013 (Reaffirmed 2023).
- B. ASHRAE Std 52.1 - Gravimetric and Dust-Spot Procedures for Testing Air Cleaning Devices Used in General Ventilation for Removing Particulate Matter; American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
- C. ASHRAE Std 52.2 - Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size; 2017, with Addendum (2022).

##### 1.4 PERFORMANCE REQUIREMENTS

- A. Conform to Section 7.4.
  - 1. Dust Spot Efficiency: Plus or minus 5 percent.

##### 1.5 SUBMITTALS

- A. See Section 23 01 00 - General HVAC Provisions, for submittal procedures.
- B. Product Data: Provide data on filter media, filter performance data, filter assembly and filter frames, dimensions, motor locations and electrical characteristics and connection requirements.
- C. Shop Drawings: Indicate filter assembly and filter frames, dimensions, motor locations, and electrical characteristics and connection requirements.
- D. Manufacturer's Installation Instructions: Indicate assembly and change-out procedures.

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- E. Operation and Maintenance Data: Include instructions for operation, changing, and periodic cleaning.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. Extra Filters: One additional set of each type and size of disposable panel filters to be installed at the time the building is conveyed to the Owner.

## 1.6 QUALITY ASSURANCE

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

## PART 2 PRODUCTS

### 2.1 FILTER MANUFACTURERS

- A. American Filtration Inc.
- B. AAF International/American Air Filter.
- C. Camfil Farr Company.
- D. Substitutions: See Section 23 01 00 - General HVAC Provisions.

### 2.2 DISPOSABLE, EXTENDED AREA PANEL FILTERS

- A. Media: UL 900 Class 1, pleated, lofted, non-woven, reinforced cotton and synthetic fabric; supported and bonded to welded wire grid by corrugated aluminum separators.
  - 1. Frame: Cardboard.
  - 2. Nominal size: to match equipment filter size requirements.
  - 3. Nominal thickness: 2 inches.
- B. Rating, per ASHRAE Std 52.1:
  - 1. Dust spot efficiency: MERV 8.
  - 2. Initial resistance at 500 FPM face velocity: 0.30 inch WG.
  - 3. Recommended final resistance: 0.9 inch WG.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Install air cleaning devices in accordance with manufacturer's instructions.
- B. Prevent passage of unfiltered air around filters with felt, rubber, or neoprene gaskets.
- C. Do not operate fan system until filters (temporary or permanent) are in place. Replace temporary filters used during construction and testing, with clean set.

### 3.2 SCHEDULES

#### A. Air Filter Schedule

- 1. Refer to plan Equipment Schedule.

END OF SECTION

## SECTION 26 00 10

### GENERAL ELECTRICAL PROVISIONS

#### PART 1 GENERAL

##### 1.1 WORK INCLUDED

- A. Furnish and install all electrical wiring, systems, equipment and accessories in accordance with the specifications and drawings. Specifications and drawings are complimentary except that, in case of conflict, the most stringent will govern.
- B. Judgment shall be exercised to install electrical work in a practical manner to function properly, simplify future maintenance, and to fit building construction and finish. Items not shown or specified which are required to produce a complete, operative and finished system shall be provided.
- C. The electrical plans are a guide to the Contractor to show general arrangement of conduit and wiring and equipment required. If any error omissions or obscurities appear therein, which are questionable, do not conform to good practice, or appear contrary to the purpose and intent of the work, the Contractor shall promptly notify the Architect and Engineer and apply for directions before construction. The exact location of conduit runs and lengths shall be determined by the Contractor in the field.
- D. The drawings may be superseded by later revised or detailed drawings or specification addenda prepared by the Architect. The Contractor shall conform to all reasonable change without extra cost to the Owner. All items not specifically mentioned in the specifications or noted on the drawings, but which are obviously necessary to make a complete working installation, shall be included.
- E. Examine the premises in accordance with Division 1 and Division 2 of the specifications.
- F. The Owner may furnish some equipment. Electrical Contractor is responsible to check the drawings and specifications for equipment that will be furnished by the Owner. Furnish the electrical connections, etc., on all Owner furnished equipment.
- G. Should the particular equipment which any bidder proposes to install, require other space conditions than those indicated on the drawings, arrange for such space with the Engineer before submitting a bid. Should changes become necessary because of failure to comply with this clause, install the changes without additional expense.
- H. Where electrical equipment is installed that causes electrical noise interference with other electrical systems installed under this contract, equip the offending equipment with isolating transformers, filters, shielding or any other means as required for the

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satisfactory suppression of the interference as determined by the Engineer.

- I. Comply with National Electric Code, NFPA, appropriate Building Code, and all local, state, and national ordinances.

## 1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. The General Conditions and Supplementary General Conditions of the contract are an integral part of Division 26 of the Specifications. Carefully note its contents in performance of the work.
- B. The General Requirements as included in Division 1 of the Specifications are an integral part of Division 26. Carefully note its contents in performance of the work.
- C. Examine all of the contract drawings and specifications, field verify existing conditions, or otherwise determine the extent of related work in other divisions before submitting a quotation for the work in this division. Coordinate the work in this division with work in other divisions through the Electrical Contractor. No extra payment will be made for additional work required by failure to coordinate the work. Should drastic changes from original drawings be necessary, the Contractor shall notify the Architect and secure written approval and agreement from the Architect on necessary adjustments.
- D. The architectural, mechanical and structural plans and specifications, including Information to Bidders and other pertinent documents issued by the Architect or Engineer are a part of this Specification and the accompanying electrical plans. Comply with them in every respect. Examine all the above carefully.
  1. Failure to comply does not relieve the Contractor of responsibility nor may it be used as a basis for additional compensation due to omission of architectural, mechanical and structural details from the electrical drawings.
- E. Related work in other divisions requiring cooperation and coordination with this division includes, but is not limited to, the following:
  1. Power arranged under Division 1.
  2. Perform all cutting and patching as required under Division 1.
  3. Furnish all sleeves, inserts, anchors and supports required by this work to be installed in concrete or masonry and coordinate with the respective trades under Division 3 and 4 for proper locations and installation.
  4. Flash and seal roof penetrations in accordance with Division 7. Furnish locations and sizes and coordinate the installation with the respective trade.

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5. Perform painting of electrical equipment and materials in finished areas as required under Division 9. Touch up or prime any surfaces required in this division in accordance with Division 9. Provide factory finishes as specified in other sections of this division.
6. Install branch circuits and make final connections to any equipment requiring electric power that is furnished and installed by the Contractor or by the Owner. Perform the electrical work according to approved shop drawings.
7. Install empty raceways and outlet boxes or branch circuits for equipment to be furnished by others and installed after completion of the contract.
8. Install and connect motor starters furnished under Division 23 where starters are not an integral part of the equipment. Insure that starters generally conform to the requirements of this division.
9. 120 volt control wiring is furnished and installed by the Electrical Contractor in accordance with the requirements of Division 23.
10. Mechanical equipment control conduit system furnished and installed by the Mechanical Contractor.
11. Motors are furnished and installed generally as an integral part of equipment specified under Division 23 and must conform to the requirements of this division.

### 1.3 FEES, PERMITS AND INSPECTIONS

- A. Obtain any and all required permits in connection with this work under the Contract and pay any and all fees in connection therewith to include fees by the utility companies.
- B. Under this section of work the Contractor shall, upon completion of the work, furnish a certificate of final inspection to the Architect from the inspection department having jurisdiction.

### 1.4 CODES AND STANDARDS

- A. All work shall be done in a good workmanlike manner. Materials and workmanship shall comply with all applicable local state and federal codes including, but not limited to, the following:
  1. National Electrical Code, Latest Edition (NEC).
  2. Underwriters' Laboratories, Inc. (UL).

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3. Institute of Electrical and Electronic Engineers (IEEE).
  4. Insulated Power Cable Engineers' Association (IPCEA).
  5. National Electrical Manufacturers' Association (NEMA).
  6. American Standards Association (ASA).
  7. American Society for Testing Materials (ASTM).
  8. State Fire Prevention Code.
  9. Occupational Safety and Health Act (OSHA).
  10. National Fire Protection Association (NFPA).
  11. International Building Code (IBC).
- B. Comply with all State and Federal ADA Accessible Guidelines in regard to accessible or handicapped features.
  - C. The latest specifications and standards available shall be used for the above.
  - D. In case of discrepancy between the applicable codes, plans and specifications, the most stringent shall govern.
  - E. Should the Contractor perform any work that does not comply with requirements of the applicable authorities, he shall bear all cost arising in correcting the deficiencies.
  - F. Equipment and materials which are not covered by UL standard will be accepted provided equipment and material is listed, labeled, certified or otherwise determined to meet safety requirements of a nationally recognized testing laboratory.

## 1.5 DEMOLITION

- A. Coordinate all demolition with the General Contractor. All existing wiring is to be removed as necessary. Reuse existing circuits for relocated devices and light fixtures.

## PART 2 PRODUCTS

### 2.1 QUALIFICATION (PRODUCTS AND SERVICES)

- A. Approvals are required of products or services of proposed manufacturers, suppliers and installers and will be based upon submission by Contractor of certification.
- B. Manufacturer's Qualifications, provide submittal information with the following:  
Manufacturer regularly and presently manufactures as one of the manufacturer's principal products the following items and has manufactured these items for at least

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five (5) years.

1. Wire and Cable - all types.
  2. Light Fixtures.
  3. Lighting Switches and Receptacles.
  4. Dimmers.
  5. Molded Case Circuit Breakers.
  6. Fuses.
  7. Conduit.
  8. Wiring Devices.
  9. Low Voltage Fusible and Non-Fusible Switches.
  10. Fire Alarm Systems and Equipment.
  11. Conduit Supports and Fittings.
  12. Fire Sealant.
- C. Manufacturer's product submitted must have been in satisfactory operation on three (3) installations similar to this project for approximately five (5) years.
- D. There must be a permanent service organization maintained or trained by manufacturer which will render satisfactory service to this installation within eight (8) hours of receipt of notification that service is needed.
- E. Installer must have the technical qualifications, experiences, trained personnel and facilities to install specified items including at least three (3) years of successful installation of electrical work similar to that required on this project. Approval will not be given where the experience record is one of unsatisfactory performance.
- F. The lighting wholesale supplier shall have an office and a stocking warehouse within 100 miles of the project site. The distributor/manufacturer's representative shall have an office within 100 miles of the project site, and shall have on staff a full time lighting designer as well as personnel who are available to service the project after completion.

## 2.2 MANUFACTURED PRODUCTS

- A. Insure that materials and equipment furnished is of current production by manufacturers regularly engaged in the manufacture of such items for which replacement parts should be available.
  - 1. Items not meeting this requirement but which otherwise meet technical specifications and merits of which can be established through reliable test reports or physical examination of representative samples will be considered.
- B. Provide products of a single manufacturer when more than one (1) unit of the same product is needed.
- C. Equipment Assemblies and Components:
  - 1. All components of an assembled unit need not be products of the same manufacturer.
  - 2. Manufacturers of equipment assemblies which include components made by others must assume complete responsibility for the final assembled unit.
  - 3. Components must be compatible with each other and with the total assembly for the intended service.
  - 4. Constituent parts which are similar must be the product of a single manufacturer.
  - 5. Moving parts of any element of equipment of the units normally requiring lubrication must have means provided for such lubrication and must be adequately lubricated at factory prior to delivery.
- D. Identify all factory wiring on the equipment being furnished and on all wiring diagrams.
- E. Equipment and materials shall be new and shall bear the manufacturer's name, trade name and the UL label in every case where a standard has been established for the particular material.
- F. Equipment and materials of the same general type shall be of the same make throughout the work to provide uniform appearance, operation and maintenance.
- G. Dimensions: It shall be the responsibility of the Contractor to insure that items furnished fit the space available. He shall make necessary field measurements to ascertain space requirements, including those for connections, and shall furnish and install such sizes and shapes of equipment that the final installation shall suit the true intent and meaning of the drawings and specifications. Dimensions are to be taken

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from the architectural drawings.

- H. Manufacturer's directions shall be followed completely in the delivery, storage, protection and installation of equipment and materials. Notify the Architect of any conflict between any requirement of the contract documents and the manufacturer's directions and obtain the Architect's written instruction before proceeding with the work. Should the Contractor perform any work that does not comply with the manufacturer's directions or such written instructions from the Architect, he shall bear all costs arising in correcting the deficiencies.
- I. The Contractor shall provide and install all accessories, and incidental items to complete the work, ready to use and fully operational.

## 2.3 EQUIPMENT RATINGS AND APPROVAL OF "EQUAL" EQUIPMENT

- A. Equipment voltage ratings must be in accordance with the requirements indicated on the drawings or as specified.
- B. Obtain written approval for any equipment which differs from the requirements of the drawings and specifications.
  - 1. Furnish drawings showing all installation details, shop drawings, technical data and other pertinent information as required.
  - 2. Approval by the Engineer of the equal equipment does not relieve the Contractor of the responsibility of furnishing and installing the equipment at no additional cost.
  - 3. Furnish and install any other items required for the satisfactory installation of the equal equipment at no additional cost. This includes, but is not limited to, changes in branch circuits, circuit protective devices, conduits, wire, feeders, controls, panels, and correlation with other work, subject to the jurisdiction and approval of the Engineer.
- C. Equipment and materials specified herein are named to establish a standard of quality. Other material of equal quality may be substituted per Section 01 60 00 and with approval by the Architect.
- D. It is the responsibility of the Contractor to investigate any desired substitutions for specified equipment prior to submission of his bid. The contractor shall be responsible for any changes required in mechanical, electrical or structural systems resulting from equipment substitutions and shall bear all costs for those changes whether the substitute equipment is named by Architect for "equal" consideration or not. All changes shall be accomplished in a manner acceptable to the Architect at no

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additional cost to the Owner.

- E. In order to obtain prior approval on equipment or material not specified in Division 26, 27 and 28 Specifications or Equipment Schedules, Contractor MUST submit to the Engineer any proposed equipment or material ten (10) working days prior to the bid date.

## 2.4 EQUIPMENT PROTECTION

- A. Store all materials and equipment to be installed in the work so as to insure the preservation of their quality, workability, and fitness for the work intended. Provide storage provisions for protection from the elements, rust and physical damage. Place stored materials on clean, hard surfaces above ground and keep covered at all times to insure protection from paint, plaster, dust, water and other construction debris or operations. Install heaters under the protective cover where the equipment may be damaged due to moisture and weather conditions. Keep conduit ends plugged or capped and all covers closed on boxes, panels, switches, fixtures, etc., until installation of each item. Store all plastic conduit or duct out of direct sunlight in shaded areas. Located stored materials and equipment to facilitate prompt inspection. All boxes and packaging must remain intact.
- B. Protect during installation, all equipment, controls, controllers, circuit protective devices, etc., against entry of foreign matter on the inside and be vacuum clean both inside and outside before testing, operating and painting.
- C. Replace damaged equipment, as determined by the Engineer, in first class operating condition or return to source of supply for repair or replacement.
- D. Protect painted surfaces with removable heavy Kraft paper, sheet vinyl or equal, installed at the factory and removed prior to final inspection.
- E. Repair damaged paint on equipment and materials. Finish with same quality of paint and workmanship as used by manufacturer so repaired areas are not obvious.
- F. All lighting fixtures are to be stored on the project in their original factory cartons.

## 2.5 EQUIPMENT ACCESSORIES

- A. Furnish and install all equipment, accessories, connections and incidental items necessary to fully complete all work, ready for use, occupancy and operation by the Owner.
- B. Where equipment requiring different arrangement or connections from those shown is provided, install the equipment to operate properly and in harmony with the intent of the drawings and specifications.

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- C. Support, plumb, rigid and true to line all work and equipment included. Study thoroughly all general, structural, electrical and mechanical drawings, shop drawings and catalog data to determine how equipment is to be supported, mounted or suspended and provide extra steel bolts, inserts, pipe stands, brackets and accessories for proper supports whether or not shown on the drawings. When directed, submit drawings showing supports.

## PART 3 EXECUTION

### 3.1 WORK PERFORMANCE

- A. Furnish and install a temporary electrical distribution system of adequate feeder sizes to prevent excessive voltage drop. Install all temporary work in a neat and safe manner. Provide temporary lighting as necessary to furnish 2.5 footcandles on all work surfaces.
- B. Field coordinate with other trades in ample time to build all chases and openings, set all sleeves, inserts and concealed materials, and provide clearances that may be required to accommodate materials and equipment. Lay out electrical work so that in case of interference with other items the layout may be altered to suit conditions encountered.
- C. Cutting and Patching:
  - 1. The Electrical Contractor shall be responsible for all required cutting, patching, etc., incidental to this work and shall make all required repairs thereafter to the satisfaction of the Engineer. Do not cut into any structural element, beam or column without the written approval of the Engineer.
  - 2. Pipes, conduits, cables, wires, wire ducts and similar equipment that pass through fire or smoke barriers shall be protected in accordance with NFPA 101.
- D. Wall Penetrations: When conduit, wireways, bus duct and other electrical raceways pass through fire partitions, fire walls, or walls and floors, install a firestop that provides an effective barrier against the spread of fire, smoke and gases. Firestop material must be packed tight and completely fill clearances between raceways and openings. Use firestop material conforming to the following:
  - 1. All wall penetrations shall be caulked and sealed. Provide fire barrier pillows to protect the interior of conduits/sleeves passing through fire rated walls.
  - 2. The Contractor shall furnish and install all necessary sleeves and chases for all work passing through and attaching to walls, ceilings or the roof.

3. Provide UL listed, fire rated poke through devices for floor penetrations as required by the Standard Building Code, National Fire Code and Life Safety Code.
  4. Provide UL approved fire rated chases and fire sealing as required to maintain fire rating for all penetrations in fire rated walls.
  5. Firestopping material must be of the latest type as supplied by leading manufacturers such as "3M".
  6. Floor, exterior wall and roof seals must be watertight. Sleeve walls and floors which are cored for installation of conduit with steel tubing, grouted and the space between the conduit and sleeve filled as specified herein. Where conduits pierce the roof, refer to architectural specifications and drawings for details. Provide pourable sealant as specified by the Roofing Contractor.
- E. Do not use electrical hangers and other supports for other than electrical equipment and materials. Provide not less than a safety factor of five (5) and conform with any specific requirements as shown on the drawings or in the specifications.
- F. Do not deviate from the plans and specifications without the full knowledge and consent of the Engineer. Should, at any time during the progress of the work, a new or existing condition be found which makes desirable a modification of the requirements of any particular item, report such item promptly to the Engineer for his decision and instruction.
- G. Notify all other contractors of any deviations or special conditions. Resolve interferences between the work of the various contractors prior to installation. Remove, if necessary, work installed which is not in compliance with the plans and specifications as specified above, and properly reinstall without additional cost to the Owner.
- H. This Contractor shall furnish all necessary scaffolding, cranes, tackle, tools and appurtenances of all kinds, and all labor required for the safe and expeditious execution of his contract.

### 3.2 EQUIPMENT INSTALLATION AND EQUIPMENT

- A. Installation:
1. "Provide" and "Install" as used on the drawings and in the specifications means furnish, install, connect, adjust and test except where otherwise specified.
  2. Install coordinated electrical systems, equipment and materials complete with auxiliaries and accessories installed.

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- B. Equipment Location: As close as practical to locations shown on drawings.
- C. Working Spaces: Not less than specified in the National Electrical Code for all voltages specified.
- D. Inaccessible Equipment:
  - 1. Where the Engineer determines that the Contractor has installed equipment not conveniently accessible for operation and maintenance, remove and reinstall equipment as directed at no additional cost.
  - 2. "Conveniently Accessible" is defined as being capable of being reached without the use of ladders or without climbing or crawling under or over obstacles such as motors, pumps, belt guards, transformers, piping and ductwork.
- E. Equipment and Materials:
  - 1. Install new equipment and materials unless otherwise specified.
  - 2. Insure that equipment and materials are designed to provide satisfactory operation and operating life for environmental conditions where being installed. NEC and other code requirements applied to the installation and other code requirements apply to the installation in areas requiring special protection such as explosion proof, vapor-proof, water tight and weather-proof construction.

### 3.3 EQUIPMENT IDENTIFICATION

- A. In addition to the requirements of the National Electrical Code, install identification signage which will clearly indicate information required for use and maintenance of items such as panelboards, cabinets, motor controllers (starters), safety switches, time clocks, contactors, separately enclosed circuit breakers, individual breakers, and controllers in switchgear and motor control assemblies, control devices and other significant equipment.

### 3.4 DRAWINGS AND SPECIFICATIONS

- A. The drawings and specifications indicate the requirements for the systems, equipment, materials, operation and quality. They are not to be construed to mean limitation of competition to the products of specific manufacturers.

### 3.5 SYSTEM VOLTAGES

- A. System voltages are as follows:
  - 1. High Voltage: 480/277 volts, three phase, four-wire.

2. Low Voltage: 208/120 volts, three phase, four-wire.

### 3.6 SUBMITTALS

- A. Obtain the Engineer's approval for all equipment and materials before purchasing or delivery to the job site. Delivery, storage or installation of equipment or material which has not had prior approval is not permitted at the job site. Only equipment and material which have been approved by submittals may be used on this project. Refer to Section 26 00 10, Paragraph 2.3.E for substitutions.
- B. Include in all submittals adequate descriptive literature, catalog cuts, shop drawings and other data necessary for the Engineer to ascertain that the proposed equipment and materials comply with specification requirements. Catalog cuts submitted for approval must be legible and clearly identify equipment being submitted.
- C. Submit to the Engineer within (30) days after the awarding of the Contract, a complete set of brochures of shop drawings and descriptive data of all material and equipment proposed for the installation. All information shall be submitted electronically in "pdf" format, and shall be separated into electronic "pdf" files in three groups, lighting, switchgear and all others.
- D. The submittals must include the following:
  - 1. Information which confirms compliance with contract requirements. Include the manufacturer's name, model or catalog numbers, catalog information, technical data sheets, shop drawings, pictures, nameplate data and test reports as required.
  - 2. Elementary and interconnection wiring diagrams for communication and signal systems, control system and equipment assemblies. All terminal points and wiring must be identified on wiring diagrams.
  - 3. Parts list which must include those replacement parts recommended by the equipment manufacturer.
  - 4. Approvals will be based on complete submission only.
- E. Furnish shop drawings for the work involved in sufficient time so that no delay or changes will be caused. Thermofax copies are not acceptable - only permanent type prints are allowed.
- F. Verify that shop drawings comply in all respects with the item originally specified. It is the Contractor's responsibility to procure the proper sizes, quantities, rearrangements, structural modifications or other modifications in order for the substituted item to comply with the established requirements.

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- G. Any shop drawings prepared to illustrate how equipment, conduit, fixtures, etc., can be fitted into available spaces will be examined under the assumption that the Contractor has verified all the conditions. Obtaining approval thereon does not relieve the Contractor of responsibility in the event the material cannot be installed as shown on the drawings.
- H. Shop drawings need not cover detailed installation drawings prepared for the Contractor's own use, but be limited, as in the case of raceways, to necessary departures from the plans as prepared by the Engineer.
- I. Submit working scale drawings of apparatus and equipment which in any way varies from these specifications and plans, to be reviewed by the Engineer before the work is started. Correct interferences with the structural conditions before the work proceeds.
- J. Submit all shop drawings at the same time in a loose-leaf binder with double index as follows:
  - 1. List the products by designated letter or number as indicated on plan sheets.
  - 2. List the name and manufacturers whose products have been incorporated in the work alphabetically together with their addresses and the name and addresses of the local sales representative.
  - 3. Provide indexes with sheet numbers and quantities of the products listed.

### 3.7 TESTS AND DEMONSTRATION

- A. As equipment and materials are being installed and connected, test the installation for the following:
  - 1. Short circuits and ground faults.
  - 2. Insulation resistance at 500 volts DC.
  - 3. Grounding continuity.
- B. After tests are completed and necessary corrections are made, put each system into operation and demonstrate its performance to the satisfaction of the Owner's authorized representative.
- C. Provide written documentation of tests and performance as requested by the Owner's authorized representative. The results are to be made part of the Closeout Documents.
- D. Furnish all instruments, test equipment and personnel that are required for the particular test. Certify that equipment and gauges are in good working order. Remove equipment subject to damage during test from line before test is applied.

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- E. After installation is complete the Contractor shall conduct operating test of all electrical systems for approval by the Architect. Test shall include verification of direction of rotation for all motors. The equipment shall be demonstrated to operate in accordance with the requirements of the plans and specifications. The test shall be performed in the presence of the Architect or Engineer.
- F. Provide certified test of the grounding electrode system. It shall test to 5 ohms or less.

### 3.8 COMPLETION AND ACCEPTANCE

- A. Upon completion of the work and before final acceptance, perform the duties and provide the documents as follows in accordance with the General Conditions, Supplementary Conditions and Division 1 of Contract.
- B. Remove all rubbish, tools and surplus materials accumulated during the execution of the work in this Division.
- C. Touch up any equipment or finishes damaged during delivery or installation from the work in this Division.
- D. Provide a written one-year guarantee of materials and work except for items that are specified to have a longer warranty. Items that have a published or normal life expectancy of less than one year, such as incandescent lamps are to be covered by the manufacturer's guarantee.
- E. Provide systems and equipment installation, operating and maintenance instructions and catalog data for transmittal to the Owner. Place the data in a loose-leaf binder which contains an index of the products listed alphabetically by name and a separate index listing the manufacturers alphabetically by name and including the manufacturer's address and the name and address of their local representative.
- F. Instruct the Owner's representative in the proper operation and maintenance of the systems and their elements as required or directed to familiarize the Owner in the operation and maintenance of the systems.

### 3.9 RECORD DRAWINGS

- A. The Contractor shall keep a neat and accurate record of field changes made during construction. Changes shall be penciled in on a separate set of drawings used only for recording changes. At completion of the project the Contractor shall deliver this set to the Architect for preparation of record drawings.
- B. Record drawings shall include corrected panel schedules and riser diagram as well as all plan sheets.



### 3.10 FINALLY

- A. It is the intention that this specifications shall provide a complete installation. All accessories and apparatus necessary for complete operational systems shall be included. The omission of specific reference to any part of the work necessary for such complete installation shall not be interpreted as relieving this Contractor from furnishing and installing such parts.

END OF SECTION

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## SECTION 26 05 19

### WIRES AND CABLES

#### PART 1 GENERAL

##### 1.1 WORK INCLUDED

- A. Wires and cables.

##### 1.2 RELATED WORK

- A. Section 26 05 53: Identification.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Wire and cable shall be new, shall have size, grade of insulation, voltage and manufacturer name, permanently marked on outer covering at regular intervals.
- B. Building Wiring: 95% conductivity, soft drawn conforming to requirements of the NEC and relevant ASTM specifications, copper, 600 volt insulation, dual rated THHN-THWN.
- C. Branch Circuit Wiring: Conductors smaller than No. 12 AWG not permitted; No. 8 AWG and larger, stranded construction; smaller than No. 8, either solid or stranded.
- D. Fire Alarm System Wiring: UL Listed plenum-rated cable for conductors installed in plenum rated spaces. Coordinate with Authority Having Jurisdiction.
- E. Exterior Wiring: Bare stranded for ground, THWN-THHN for all other.
- F. Use pre-insulated pressure connectors such as Scotchlock on stranded conductors No. 10 and smaller. Use approved high-pressure crimp sleeve connectors on No. 8 and larger conductors.
- G. Where allowed by local inspecting authorities, type "MC" cable shall be allowed for fixture whips. It shall be installed using proper fittings and installation tools per NEC.
- H. Low voltage cable is to be installed in conduit in areas with no ceiling.

#### PART 3 EXECUTION

##### 3.1 INSTALLATION

- A. Make conductor length for parallel feeders identical.

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- B. Lace or clip groups of conductors at panelboards, pull boxes and wireways.
- C. Provide copper grounding conductors and straps.
- D. Install wire and cable in code conforming raceway.
- E. Use wire pulling lubricant for pulling No. 4 AWG and larger wire.
- F. Install wire in conduit runs after concrete and masonry work is complete and after moisture is swabbed from conduits.
- G. Splice only in accessible junction or outlet boxes. Install splices and taps which have mechanical strength and insulation rating equivalent-or-better than conductor and are compatible with conductor material.
- H. Color code conductors to designate neutral conductor and phase as follows: 120/208V (phases) black, red, blue, (neutral) white, (ground) green; 277/480V (phases) orange, brown, yellow, (neutral) white with color stripe, (ground) green.
- I. All 20 amp circuits are 2-#12, 1-#12 ground unless noted. Use #10 AWG conductors on 20 amp branch circuits which exceed 75 feet to the first outlet.
- J. Install home runs as indicated on the panel schedules. Circuits may be grouped into 3-Phase home runs but in no case are more than 3 phase conductors allowed.
- K. Sharing of neutrals is not allowed, to include lighting and power circuits.
- L. Where conduit and wire are installed on the roof, refer to NEC Section 310.15.(B.)(2)(C) for derating/correcting factors for the distance installed from the roof.
- M. No low-voltage wiring is to be visible in open ceiling areas; install in conduit.

### 3.2 MARKING

- A. Identify circuits using wire markers at the following locations:
  - 1. All power and lighting branch circuits and feeders at pull boxes, fixtures, outlets, motors, etc., indicating panel and circuit number at which each circuit or feeder originates.
  - 2. All branch circuits in the panelboard gutters indicating corresponding branch circuit numbers.
  - 3. All signal and control wires at all termination points such as cabinets, terminal boxes, equipment racks, control panels, consoles, etc. Install in accordance with approved schedules prepared by the equipment manufacturer or by the Contractor.

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4. Mark both ends of all pull wires with tag reading "PULL WIRE" and numbered to refer to the same pull wire.

END OF SECTION

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## SECTION 26 05 26

### GROUNDING

#### PART 1 GENERAL

##### 1.1 WORK INCLUDED

- A. Power system grounding.
- B. Communication system grounding.
- C. Building ground system.

##### 1.2 RELATED WORK

- A. Section 26 05 19: Wires and Cables.
- B. Section 26 05 34: Conduit.

##### 1.3 REGULATORY REQUIREMENTS

- A. Install complete grounding system for the building(s) and all electrical equipment in accordance with National Electrical Code, Section 250.

#### PART 2 PRODUCTS

##### 2.1 GROUNDING

- A. Provide copper grounding conductors for grounding connections sized according to NEC.

#### PART 3 EXECUTION

##### 3.1 POWER SYSTEM GROUNDING

- A. Install NEC sized ground conductor, #12 AWG minimum, in all branch circuit and equipment conduits.
- B. Bonding Jumpers: Provide green insulated wire, size correlated with over-current device protecting the wire. Connect to neutral only at service neutral bar.
- C. Bonding Wires: Install bonding wire in flexible conduit connected at each end to a grounding bushing.
- D. No strap type grounding clamps shall be used. All connections shall be made only after surfaces have been cleaned or ground to exposed metal.

26 05 26 -1

- E. Bond the neutral (grounded conductor) to ground at one location only once per building at the building's main service disconnect. Bond per NEC Article 250.
- F. Ground cable trays per N.E.C.

END OF SECTION

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## SECTION 26 05 29

### SUPPORTING DEVICES

#### PART 1 GENERAL

##### 1.1 WORK INCLUDED

- A. Conduit supports.

#### PART 2 PRODUCTS

##### 2.1 CONDUIT SUPPORTS

- A. Single Runs: Galvanized conduit straps or ring bolt type hangers with specialty spring clips. All "Caddy" and "B-Line" hangers are approved.
- B. Multiple conduits running horizontally at the same grade and elevation may be supported by trapezes of channels suspended on rods. All support components shall be adequate size for loaded weights being supported. Provide conduit racks with 25% spare capacity.
- C. Perforated strap iron or wire shall not be used for supporting conduits or equipment.
- D. Where large conduits are supported beneath bar joist, hanger rods shall be secured to angle irons of adequate size. Each angle shall span two or more joist to distribute the weight properly.
- E. Supports shall be installed within three (3) feet of each coupling or connector.
- F. Vertical Runs: Channel support with conduit fittings, clamp type supports where conduits penetrate floors.

##### 2.2 ANCHOR METHODS

- A. Hollow Masonry: Toggle bolts or spider type expansion anchors.
- B. Solid Masonry: Lead expansion anchors or preset inserts.
- C. Metal Surfaces: Machine screws, bolts or welded studs.
- D. Wood Surfaces: Wood screws.
- E. Concrete Surfaces: Self drilling anchors or power driven studs.

## 2.3 METAL FRAMING SYSTEMS

- A. Provide metal framing systems for electrical equipment and conduits as required for proper support spacing and approved for the purpose. Powerstrut, Unistrut, Kindorf or equal.

## 2.4 CABLE SUPPORTING SYSTEMS

- A. Along each corridor on one side of the corridor, install cable supports, above the ceiling, supported by the wall studs. They shall be four tier, two-inch galvanized steel, equal to B-Line # BCH 32-4S. Install at four-foot intervals.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Layout to maintain headroom, neat mechanical appearance, and to support equipment loads required.
- B. Install horizontal supports at eight feet (8') on centers, at fittings and corners, and as required for proper support.
- C. Provide a complete installation with all channels, accessories, screws, nuts, washers, inserts, springs, clamps, hangers, clips, fittings, brackets framing fittings, post bases and brackets to provide a structural rigid support or mounting system.
- D. On the roof, provide B-Line DB series roof top support bases. Provide two supports per 10' length of conduit. Conduit to be 24" off the roof, minimum. Provide 1/2" rubber pads under the B-Line support blocks. Coordinate to be higher than other trades' piping on the roof. Install conduit in the ceiling space below where possible.

END OF SECTION



## SECTION 26 05 34

### CONDUIT

#### PART 1 GENERAL

##### 1.1 WORK INCLUDED

- A. Conduit and couplings.
- B. Flexible conduit.

##### 1.2 RELATED WORK

- A. Section 26 05 53: Identification.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Conduit/Elbows: Rigid steel threaded ANSI C80.1; electrical metallic tubing ANSI C80.3, Schedule 40 PVC.
- B. Couplings/Connectors: Threaded; liquid-tight; compression gland. Set screw type products are not allowed.
- C. Flexible Conduit: Aluminum or steel armor, plastic jacketed type with liquid-tight connectors used only at motor/equipment terminations. Connectors are to be metal.
- D. Metal Clad Cable: Type "MC" cable may be used where allowed by local codes for fixture whips only.
- E. PVC or High Density Polyethylene Conduit: HDPE or PVC conduit is acceptable for underground and innerduct applications.

##### 2.2 TYPE

- A. Utilize rigid steel conduit (3/4" minimum) in the following locations:
  - 1. In concrete.
  - 2. In exterior locations.
  - 3. Areas subject mechanical abuse.
- B. Utilize electrical metallic tubing in other locations, 3/4" minimum. Only E.M.T. is allowed in walls. E.M.T. may be Steel or Aluminum.

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- C. Make connections to motors and equipment with PVC jacketed flexible conduit and liquid-tight connectors. Minimum size 1/2" for motor connections. Use 3/8" Greenfield flexible conduit only for fixture wiring. Provide sufficient length of flexible conduit to avoid transmission of vibration. Install straps per NEC.
- D. PVC conduit may be used for underground service entrance conduits and all low voltage under-slab applications. It is not to be installed exposed. Elbows for service conduits and panel feeders are to be galvanized rigid.
- E. Flexible conduit is not allowed within walls.
- F. Conduit on the roof is rigid aluminum.

## 2.3 MARKING

- A. All empty conduit shall be left with a pull string for future use, and shall be permanently marked on each end with like numbers.
- B. Mark the conduits and boxes mentioned in this Section paragraph 2.2F as to circuits included and on the record drawings.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. All wiring systems shall be installed in raceways consisting of galvanized steel tubing, PVC conduit, HDPE conduit, rigid galvanized steel, flexible steel conduit or neoprene covered flexible steel conduit.
- B. Water tight junction boxes, fittings, expansion joints, compression fittings (for use with all electrical tubing), conduit hubs, etc., shall be provided, for all electrical systems wherever construction dictates, including, but not limited to, outdoor locations.
- C. Flexible conduit used in outdoor locations or indoor locations where exposed to continuous or intermittent moisture shall be liquid tight, neoprene covered and UL listed. All fittings for such applications shall be liquid tight, nylon insulated throat type as manufactured by Thomas and Betts, Series 5331, or approved equal.
- D. Sufficient slack shall be provided in all flexible conduit connections to reduce the effects of vibration.
- E. Insulated bushings shall be used where rigid conduit is installed in any enclosure or junction box. In addition, insulated bushings shall be used on all conduits 1 1/4-inch and larger.

- F. All conduit bends shall have a radius greater than or equal to that stipulated by the NEC.
- G. Install conduit concealed in all areas excluding mechanical and electrical rooms and conduit to fixtures in rooms without ceilings.
- H. For exposed runs, attach surface mounted conduit with clamps.
- I. Coordinate installation of conduit in masonry work.
- J. Install conduit free from dents and bruises. Plug ends to prevent entry of dirt or moisture.
- K. All conduit systems shall be installed complete and shall be cleaned out before installation of conductors.
- L. Alter conduit routing to avoid structural obstructions, minimizing crossovers.
- M. Seal conduit with glass fiber where conduits leave heated area and enter unheated area.
- N. Provide flashing and pitch pockets making watertight joints where conduits pass through roof or waterproofing membranes. Provide pourable sealant as approved by the Roofing Contractor.
- O. Install UL approved expansion fittings complete with grounding jumpers where conduits cross building expansion joints (review architectural and structural drawings and coordinate with General Contractor to determine expansion joint locations). Provide bends or offsets in conduit adjacent to building expansion joints where conduit is installed above suspended ceilings.
- P. Avoid routing conduit through public spaces with exposed structure where possible.
- Q. Route all exposed conduits parallel or perpendicular to building lines. Coordinate all exposed conduit locations with the Architect prior to rough-in.
- R. In exposed ceiling areas stub conduits feeding devices in walls out of the wall as high as possible at bottom of structure or bond beam, whichever is higher.
- S. Allow minimum of 6-inch clearance at flues, steam pipes and heat sources. Allow 12-inch clearance at telephone conduits. Where possible, install horizontal raceway runs above water and steam piping.
- T. Install conduit system from cabinets to boxes, boxes to outlet and outlet to outlet in such a manner as to be electrically continuous throughout.

- U. Make bends or offsets with approved bender or hickey.
- V. Where conduits are stubbed up for low voltage cabling or future use, do so neatly; furnish with nylon pull string, conduit caps and labeling on each end.
- W. Securely support conduits from the structure using approved type clamps, hangers and assemblies. Space supports according to manufacturer's recommendations and accepted practice. Do not support conduits from ceiling suspension system. In no case exceed support spacing per NEC maximum.
- X. Avoid installing conduit on the roof. Where necessary, support conduits via B-Line type DB supports and the appropriate strut straps. Support twice per 10' length of conduit. Use supports which hold conduit 24 inches above roof. Conduit on the roof is rigid aluminum. Provide 1/2" rubber pads under the conduit supports.
- Y. Leave a nylon pull string in all empty conduits. Terminate empty conduit stubouts with bushing manufactured for that purpose.
- Z. Install properly sized grounding conductor in all conduit.
- AA. Elbows for service and panel feeders are to be galvanized rigid conduit.
- BB. No conduit may be installed in slab. Conduit for stub-ups and panel feeders are to be installed with the top of the conduit at a minimum of four inches under the slab. Bed with one-half inch washed rock. Conduit for floor boxes is to be installed coming out of the bottom of the floor box and installed under slab.
- CC. Provide conduit for all low voltage cable installed in areas which have no ceiling or hard ceilings.
- DD. All data/telephone conduits are to be "home-run" to an area above an accessible ceiling. No "Daisy Chaining" allowed.
- EE. No "Daisy Chaining" of fixtures is allowed.
- FF. Seal conduits where they transition from underground distribution system to the interior of a building or structure, refer to N.E.C. 225.27.
- GG. Where conduit penetrates walk-in coolers or freezers it shall be non-metallic. All fittings, conduit, and boxes touching the wall of the coolers or freezers shall be non-metallic. On the non-conditioned side of the penetration provide a "seal-off" fitting and pour it with the recommended sealant after the installation of wiring. All spaces around the penetrations shall be sealed with the appropriate type sealant as recommended by the equipment manufacturer. This shall apply to low voltage wiring as well as line voltage wiring.

END OF SECTION

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## SECTION 26 05 37

### OUTLET AND PULL BOXES

#### PART 1 GENERAL

##### 1.1 WORK INCLUDED

- A. Outlet boxes.
- B. Pull and junction boxes.

##### 1.2 RELATED WORK

- A. Section 26 05 53: Identification.
- B. Section 26 27 26: Wall Switches, Receptacles and Plate Covers.
- C. Section 27 10 05: Conduit for Telephone/Data and TV Raceway System.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Boxes: Hot dip galvanized, 1.25 oz/sq.ft. or cadmium plated, conforming to UL requirements.
- B. Interior Boxes: Pressed sheet steel blanked for conduit.
- C. Exterior Boxes: Corrosion-resistant cast, deep type, with face plate gasket and corrosion-resistant fasteners.
- D. For Ceiling: 4" square boxes for receiving three or less 3/4" conduits.
- E. For Flush Mounting in Walls: 4" square boxes with matching plaster cover for single or two gang outlets. For larger boxes, use solid type or special units, with flush plates.
- F. Surface Mounted: 4" square.
- G. Pull Boxes and Junction Boxes: Metal construction, conforming to National Electrical Code, with screw-on or hinged cover.
- H. Flush Mounted Pull Boxes: Provide overlapping covers with flush head cover retaining screws, prime coated.
- I. For floor boxes, refer to the electrical legend on the plans.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Mount outlet boxes flush in areas other than mechanical rooms, electrical rooms, above removable ceilings, and on exposed structure in rooms without ceilings.
- B. Do not install boxes back-to-back in same wall, allow 6" minimum horizontal spacing between boxes.
- C. Do not use sectional or handy boxes unless specifically requested.
- D. For boxes mounted in exterior walls, make sure that there is insulation behind outlet boxes to prevent condensation in boxes.
- E. For outlets mounted above counters, benches and splashbacks, coordinate location and mounting heights with built-in units. Adjust outlet mounting height to agree with required location for equipment served.
- F. Securely mount each outlet box to metal studs with outlet box mounting supports. Secure to at least two studs or install box stabilizers as manufactured by "B-Line" and "Caddy".
- G. Do not install more than three 3/4" conduits into one 4" outlet box. Do not use more than one extension ring on a box.
- H. For heights of outlets above the finished floor in permanent partitions, use the following unless otherwise noted: To Center of Device:
  - 1. Convenience Receptacles: 18" or as directed.
  - 2. Brackets: As directed.
  - 3. Switches: 46" or as directed.
  - 4. Telephone Outlets: 18" or as directed.
  - 5. Other Outlets: As directed or indicated.
  - 6. Over Counters: 6" above countertop, horizontal at windows or where indicated.
  - 7. Fire Alarm Pull stations: Minimum 42" and Max 48" measured vertically, from the floor level to activating handle or lever.
  - 8. Fire Alarm Audio Visual Device: 80" to top of box

- I. Locate pull boxes and junction boxes above removable ceiling or in electrical rooms, utility rooms or storage areas.
- J. Install pull boxes of the proper size and depth to accommodate the required conduits and wires.
- K. When installing outlet boxes in fire rated walls, provide fire blocking material on the back side of the boxes.
- L. Coordinate box mounting height with brick courses, where applicable.
- M. Study all devices and light fixtures, providing and installing applicable outlet and back boxes as necessary.
- N. Boxes for fire alarm systems are to be painted red.

END OF SECTION



## SECTION 26 05 53

### IDENTIFICATION

#### PART 1 GENERAL

##### 1.1 WORK INCLUDED

- A. Provide and install identification markers.

##### 1.2 RELATED WORK

- A. Section 26 05 19: Wires and Cables.
- B. Section 26 05 34: Conduit.
- C. Section 26 05 37: Outlet and Pull Boxes.
- D. Section 26 24 16: Panelboards.
- E. Section 26 28 18: Motor and Circuit Disconnects.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Provide nameplates of laminated phenolic plastic with engraved letters 3/16" high at push-button stations, thermal overload switches, receptacles, wall switches and similar devices where the nameplate is attached to the device plate. At all other locations, make lettering 1/4" high, unless otherwise detailed on the drawings. Securely fasten nameplates to the equipment. Motor nameplates may be non-ferrous metal not less than 0.03" thick, die stamped.
- B. Pre-marked, self adhesive, wrap around type markers, manufacturers: Brady, T&B, E-Z Code.

#### PART 3 EXECUTION

##### 3.1 INSTALLATION

- A. General: Equip the following items with nameplates:
  - 1. All motors, motor starters, motor control center, push-button stations, control panels, time switches.
  - 2. Disconnect switches, fused or unfused, switchboards and panelboards, circuit breakers, contactors or relays in separate enclosure.

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3. Power receptacles where the nominal voltage between any pair of contacts is greater than 150 volts.
  4. Wall switches controlling outlets for lighting fixtures or equipment where the outlets are not located within sight of the controlling switch.
  5. Special electrical systems at junction and pull boxes terminal cabinets and equipment racks.
- B. Adequately describe the function of or use of the particular equipment involved. Where nameplates are detailed on the drawings, use inscription and size of letters as shown. Include on nameplates for panelboards and switchboards the panel designation, voltage and phase of the supply. The name of the machine or the motor nameplates for a particular machine must be the same as the one used on all motor starter, disconnect and push button station nameplates for that machine.
- C. The Contractor shall provide typed panel schedules for all electrical panels. Schedules shall reflect actual wiring incorporating all field changes. Copies of Panel Schedules from the construction drawings are not acceptable.
1. Panel Schedules shall reflect room numbers as depicted by the Owner as well as construction numbers.
- D. Label all junction boxes with a black permanent marker indicating circuit number and distribution panel or motor control center feeding the circuits contained therein.
- E. At each panel, provide a phenolic plastic plate with 1/4-inch high engraved letters, stating the voltages in the panel, the color code of the wires in the panel, power supply origination, the arc flash hazard, and the date of the installation. Attach to the panel cover with stainless steel bolts, locknuts and nuts or locking nuts. At the main disconnect, provide a label noting the available fault current and date of installation.
- F. All breakers within each panel are to be labeled.
- G. All underground conduits are to be labeled as to each end.

END OF SECTION

## SECTION 26 05 73

### OVERCURRENT PROTECTIVE DEVICES

#### PART 1 GENERAL

##### 1.1 WORK INCLUDED

- A. Fuses.
- B. Molded-case circuit breakers.

##### 1.2 RELATED WORK

- A. Section 26 24 16: Panelboards.
- B. Section 26 28 18: Motor and Circuit Disconnects.

#### PART 2 PRODUCTS

##### 2.1 ACCEPTABLE MANUFACTURERS

- A. Fuses:
  - 1. Bussman.
  - 2. Littlefuse.
- B. Breakers and Relays:
  - 1. Eaton.
  - 2. General Electric.
  - 3. Siemens.
  - 4. Square D.

##### 2.2 CIRCUIT BREAKERS

- A. General: Except as otherwise indicated, provide circuit breakers and ancillary components, of types, sizes, ratings and electrical characteristics indicated, which comply with manufacturer's standard design, materials, components and construction in accordance with published product information and as required for a complete installation.
- B. Molded-Case Circuit Breakers: Provide factory assembled molded-case circuit breakers of frame assembled molded-case circuit breakers of frame size voltage and

interrupting ratings as indicated on the drawings. Provide breakers with permanent thermal and instantaneous magnetic trips in each pole and ampere ratings and indicated. Construct with overcenter, trip-free, toggle type operating mechanisms with quick-make, quick break action and positive handle indication. Construct breakers for mounting and operating in any physical position and operating in an ambient temperature of 40 Deg. C. Provide breakers with mechanical screw type removable connector lugs, AL/CU rated.

- C. Any overcurrent protection device rated 1200A or higher shall be furnished with an energy-reducing maintenance switching feature with local status indication. This feature shall be furnished with the overcurrent device by the manufacturer.
- D. Tandem circuit breakers are not acceptable.

## 2.3 FUSES

- A. General: Except as otherwise indicated, provide fuses of types, sizes, ratings and average time-current and peak let through current characteristics indicated, which comply with manufacturers' standard design, materials and construction in accordance with published product information and with industry standards and configurations.
- B. Class RK1 and Class J Current Limiting Fuses: Provide UL Class RK1 and Class J current limiting fuses rated 200,000 RMS symmetrical interrupting current for protecting motors and equipment, equal to Buss LPN-RK or LPS-RK.

## PART 3 EXECUTION

### 3.1 INSTALLATION OF OVERCURRENT PROTECTIVE DEVICES

- A. Install overcurrent protective devices as indicated in accordance with the manufacturer's written instructions and with recognized industry practices to insure that protective devices comply with requirements. Comply with NEC and NEMA standards for installation of overcurrent protective devices.
- B. Coordinate with other work, including electrical wiring work as necessary to interface installation of overcurrent protective devices.
- C. Fasten circuit breakers without mechanical stresses, twisting or misalignment being exerted by clamps, supports or cabling.

### 3.2 FIELD QUALITY CONTROL

- A. Prior to energization of overcurrent protective devices, test devices for continuity of circuitry and for short circuits. Correct malfunctioning units and then demonstrate compliance with requirements.

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END OF SECTION

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## SECTION 26 27 26

### WALL SWITCHES, RECEPTACLES, AND PLATE COVERS

#### PART 1 GENERAL

##### 1.1 WORK INCLUDED

- A. Wall switches.
- B. Receptacles.
- C. Plate covers.

##### 1.2 RELATED WORK

- A. Section 26 05 26: Grounding.
- B. Section 26 05 37: Outlet and Pull Boxes.
- C. Section 26 05 53: Identification.

#### PART 2 PRODUCTS

##### 2.1 ACCEPTABLE MANUFACTURERS

- A. Arrow Hart.
- B. Bryant.
- C. Eagle.
- D. General Electric.
- E. Hubbell.
- F. Leviton.
- G. P&S.
- H. Substitutions: See Section 26 00 10 - General Electrical Provisions.

##### 2.2 WALL SWITCHES

- A. Acceptable Devices
  - 1. Single Pole Switch: Type 1221, or equal.
  - 2. Double Pole Switch: Type 1222, or equal.

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3. Three-way Switch: Type 1223, or equal.
4. Four-way Switch: Type 1224, or equal.
5. Dimmers: Lutron "NOVA" Series or equal; size as required per the circuit wattage, 600 watt minimum. Provide type for the fixtures being dimmed.
6. Two-pole switches used to control two loads, like lights and exhaust fans in restrooms, must be "rated" for that duty.
7. Keyed Switches: Provide four keys per switch.

#### B. Materials

1. 120/277 Volt Switches: Quite slow make, slow break design, toggle handle with totally enclosed case, rated 20 ampere, specification grade. Provide matching two pole, three-way and four-way switches.
2. Color: Coordinate with the Architect.
3. Dimmers: Electronic switching type with toroid filter coil to eliminate RF interference.
4. Two-pole switches used to control two loads, like lights and exhaust fans in restrooms, must be "rated" for that duty.
5. Provide metal barrier between gangs in boxes, where adjacent switches have a potential in excess of 300V between conductors.

### 2.3 RECEPTACLES

#### A. Devices

1. Standard Duplex Receptacle: Nema 5-20R. Full gang size, polarized, duplex, parallel blade, U grounding slot, rated at 20 amperes, 125 volts, designed for split feed service.
2. Nameplates: Provide engraved or embossed plastic for receptacles other than standard duplex and standard single receptacles indicating voltage, phase and amperes.
3. Isolated ground outlets to be orange, emergency circuit devices to be red, all other device colors to be coordinated with the Architect.
4. Exterior receptacles are to be "GFI" and rated as "weather resistant".

#### B. Devices: Receptacles shall be extra heavy duty.

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1. Duplex Receptacle: Type 5362, or equal.
2. Duplex Receptacle, Weather Resistant: Type 5362WR, or equal.
3. Single Receptacle, Weather Resistant: Type 5361WR, or equal.

## 2.4 PLATE COVERS

### A. Materials

1. Stainless Steel: Type 302 or 304, No. 4 finish, 0.040 inches thick, accurately die cut, protected with release paper.
2. Cast Metal: Die cast profile, ribbed or strength, flash removed, primed with grey enamel, furnished complete with four mounting screws.
3. Gaskets: Resilient rubber or closed cell foam urethane.
4. Nylon: High-performance, molded nylon.
5. Stamped Metal: For use on 4" square boxes.

### B. Device

1. Flush Mounting Plates: Beveled type with smooth rolled outer edge.
2. Surface Box Plates: Beveled, steel, pressure formed for smooth edge to fit box.
3. Weatherproof Plates: CAST METAL, gasketed; for receptacles, provide the weatherproof "while in use" type.
4. Where two-gang boxes are required for single gang devices, provide special plates with device opening in one gang and second gang blank.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Coordinate switch mounting location with architectural detail and heights as noted on plans.
- B. Run separate neutral for each lighting circuit.
- C. Install switches at 46" to center above finished floor, coordinate with brick layers where applicable.
- D. Mount receptacles at mounting heights specified on the plans, 18" to center of the box unless noted otherwise.

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- E. Connect all devices using pigtails. Do not through-wire on device terminals.
- F. Mount outlets for electric water coolers and other similar permanently installed plug connected equipment behind equipment according to approved installation drawing, coordinate with the equipment installer.
- G. Install coverplates on wiring devices level and with all four edges in contact with finished surface.
- H. Use stainless steel plates in all interior areas unless noted. Use steel plates in mechanical and utility type areas.

END OF SECTION

## SECTION 26 28 18

### MOTOR AND CIRCUIT DISCONNECTS

#### PART 1 GENERAL

##### 1.1 WORK INCLUDED

- A. Provide and install motor and circuit disconnects.

##### 1.2 REGULATORY REQUIREMENTS

- A. Conform to National Electrical Code and to applicable inspection authority.

##### 1.3 REFERENCES

- A. Underwriters' Labs, Inc. Annual Product Directories.
- B. Classification of Standard Types of Non-ventilated Enclosures for Electric Controllers, National Electrical Manufacturers Association.

#### PART 2 PRODUCTS

##### 2.1 ACCEPTABLE MANUFACTURERS

- A. Eaton.
- B. General Electric.
- C. Hubbell.
- D. Leviton.
- E. Square D.

##### 2.2 EQUIPMENT

- A. Provide motor and circuit disconnects with UL label.
- B. Single Phase 120 Volt Disconnect Switches: Double pole toggle switch, Leviton MS302.
- C. Provide with lockable covers.
- D. Three-Phase Motor Disconnect Switches and Single Phase 240 Volt Disconnect Switches: 2 or 3 pole heavy duty fusible or non-fusible as shown, 250 or 480 volt as required in NEMA Type 1 or 3 enclosures. Provide with lugs for suitable wire range, with ground lug, copper current carrying parts, silver-tungsten contacts, reinforced

fuse clips for type R rejection fuses.

- E. Provide NEMA "4/4X" type disconnects within the kitchen area.

### PART 3 EXECUTION

#### 3.1 INSTALLATION

- A. Install motor and circuit disconnect as recommended by manufacturer and as required by Code.
- B. Where required by local authorities, install disconnects for all roof mounted equipment separate from that equipment. Furnish (galvanized) "Unistrut" or angle iron mounting stands with B-Line DB series roof top support base. Coordinate with the equipment supplier and Roofing Contractor.

END OF SECTION

## SECTION 26 51 00

### INTERIOR BUILDING LIGHTING

#### PART 1 GENERAL

##### 1.1 WORK INCLUDED

- A. Installation of luminaires, supports and accessories.
- B. Emergency lighting units.
- C. Exit signs.
- D. Lamps.
- E. Ballasts, drivers, and accessories.

##### 1.2 RELATED WORK

- A. Section 26 05 19: Wires and Cables.
- B. Section 26 05 29: Supporting Devices.

##### 1.3 REFERENCES

- A. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

##### 1.4 SUBMITTALS

- A. Submit shop drawings and product data in accordance with General Conditions including pertinent physical characteristics and complete photometric data reports from independent testing laboratory.
- B. Shop Drawings: Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
- C. Product Data: Provide dimensions, ratings, and performance data.
- D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Quality Assurance. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

- E. Operation and Maintenance Data: Instructions for each product. Installation manuals are required.

## 1.5 COORDINATION

- A. Confirm compatibility and interface of other materials with luminaire and ceiling system. Report discrepancies to the Engineer/Architect and defer ordering until clarified.
- B. Supply plaster frames, trim rings and backboxes to other trades.
- C. Coordinate with Division 23 to avoid conflicts between luminaires, supports, fittings and mechanical equipment.
- D. Conform to requirements of NFPA 70.
- E. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.
- F. Products: Listed and classified by Underwriters Laboratories, Inc. or testing firm acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.
- G. The lighting wholesale supplier shall have an office and a stocking warehouse within 100 miles of the project site. The distributor/manufacturer's representative shall have an office within 100 miles of the project site, and shall have on staff a full time lighting designer as well as personnel who are available to service the project after completion.
- H. Any substitutions to the light fixture schedule shall be proven, by the manufacturer at the discretion of the Engineer, to be of equal or superior quality, material, and performance than the specified light fixtures. All requests for substitutions shall be submitted along with fixture specification sheets, photometric calculations and electronic files 10 days prior to bid opening date for review. Substitutions shall be requested in writing only, accompanied by the above listed electronic files.  
Substitutions will not be considered if they are indicated or implied in shop drawing submission without previous formal request. Substitutions will not be considered if they require substantial revision of the contract documents. The Contractor shall be responsible for any and all additional costs required by modifications to architectural, structural, mechanical or electrical facilities, devices, systems, etc. resulting from the approved substitution.
- I. Light fixtures and ballasts are to comply with the fixture schedule and the Specifications.

## PART 2 PRODUCTS

### 2.1 LUMINAIRES

#### A. Acceptable Manufacturers

1. Provide products of manufacturers as listed in the lighting fixture schedule or equal, subject to compliance with requirements.
2. Fixtures are to be supplied in manufacturer's standard cartons.
3. Substitutions: See Section 26 00 10 - General Electrical Provisions.

#### B. Lensed Luminaires

1. Pre-treat housing and finish in high reflectance baked white powder paint on exposed and reflective surfaces giving reflectance of 90% minimum average. Paint shall be applied after fabrication.
2. Reflective end plates may be 20 gauge metal.
3. Provide full 22 gauge steel housing.
4. Provide hinged frames with fully enclosed spring loaded cam latches and T-type hinges, removable for cleaning without tools. Support lay-in lenses on four sides with flip ends on short dimension.
5. Provide gasketing, stops and barriers to form light traps and prevent light leaks.
6. Design luminaire to dissipate ballast and lamp heat.
7. Use formed or ribbed backplates, endplates, reinforcing channels.
8. Provide virgin acrylic diffusers, 0.125" thick nominal, number 12 pattern, 7.8 oz. weight per square foot.
9. Furnish products as indicated in Fixture Schedule, or equal.

#### C. Recessed Luminaires

1. Supply recessed luminaire complete with trim type required for ceiling system installed. Before ordering, confirm ceiling construction details and architectural finish for each area. Supply with "IC" type housing or gyp board hat over the fixture, where insulation will cover.
2. Fixtures shall be delivered to the job site in factory provided individual cartons.
3. All damaged fixtures are to be replaced

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## 2.2 LAMPS

### A. Acceptable Manufacturers

1. General Electric.
2. Osram/Sylvania.
3. Philips.

### B. LED Lamps

1. LED Lamps: Manufacturers must have Energy Star/DLC rating or shall offer LM-80 and TM-21 test reports to the public online.
2. LED estimated useful life: Minimum of 50,000 hours at 70% lumen maintenance, calculated based on LM-80 test data.
3. LED fixtures shall be modular and allow for separate replacement of LED lamps and drivers. User serviceable LED lamps and drivers shall be accessible and replaceable from the room side.
4. Light fixture provider shall provide all low voltage control wiring for dimmable fixture.
5. Note lamp color specifications on the fixture schedule, minimum CRI shall be 80.
6. All light fixtures shall be provided with a 5 year warranty on the LED and driver system.

## 2.3 BALLASTS AND DRIVERS

### A. Provide ballasts that meet standards of an electrical testing laboratory and the Certified Ballasts Manufacturers' Association.

### B. Acceptable Manufacturers:

1. Universal.
2. Philips/Advance.
3. Osram/Sylvania.

### C. LED Drivers

1. LED drivers shall be electric-type, labeled as compliant with radio frequency interference (RFI) requirements of FCC Title 47 Part 15, and comply with NEMA SSL 1 "Electronic Drivers for LED Devices, Arrays, or System". LED drivers

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shall have a sound rating of "A", have a minimum efficiency of 85%, and be rated for a THD of less than 20 percent at all input voltages.

2. Dimmable LED drivers shall be 0-10V type unless otherwise noted on the schedule. Dimmable LED drivers shall be capable of dimming without LED strobing or flicker across their full dimming range.
3. Emergency LED drivers shall be manufactured by a company with a minimum of five (5) years service. They shall be factory installed and tested, to include red pilot lights. They shall be manufactured by Bodine Mfg. and be rated at 1100 lumens, minimum.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Install lamps in accordance with manufacturer's instructions.
- B. Provide spare lamps in the amount of 5% of the total count, or 5 each type, whichever is the greater number.
- C. All incandescent lamps shall be replaced at the Date of Substantial Completion.
- D. Provide ballasts of compatible design to lamps specified.
- E. No "Daisy Chaining" of fixtures is allowed.
- F. Install fixtures securely, in a neat and workmanlike manner.
- G. Install suspended luminaires and exit signs using pendants supported from swivel hangers. Provide pendant length required to suspend luminaire at indicated height.
- H. Support all luminaires independent of ceiling framing, directly from building structure by rod hangers and inserts or suspension wire, two per fixture.
- I. Install surface mounted luminaires and exit signs plumb and adjust to align with building lines and with each other. Secure to prevent movement.
- J. Install recessed luminaires to permit removal from below.
- K. Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating.
- L. Install clips to secure recessed grid-supported luminaires in place.
- M. Install wall mounted luminaires, emergency lighting units, and exit signs at height as scheduled.

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- N. Manufactured wiring systems are approved. Provide submittals per Specifications.

### 3.2 RECESSED LUMINAIRES

- A. Perform field inspection, testing, and adjusting in accordance with Section 26 00 10.
- B. Install recessed luminaires to permit removal from below to gain access to outlet or pre-wired fixture box.
- C. Install an accessible junction box not less than two feet away from the fixture and connect to it by not less than four feet nor more than six feet of flexible conduit, using type of fixture wire approved for this purpose.
- D. Mount in suspended ceiling with exposed tee bar grid system, support directly from the building structure by a minimum of two support wires.
- E. Hold insulation back from all fixtures by three (3) inches and clear on top.
- F. A disconnecting means is required for all ballasted luminaires with double ended lamps. Install per NEC 410.130(G).

### 3.3 ALIGNMENT

- A. Aim and adjust luminaires.
- B. Align luminaires, clean diffusers and replace burned out lamps prior to final acceptance.

### 3.4 FIRE RATED CEILINGS

- A. Where recessed fixtures will penetrate either fire-rated ceilings or fire rated gypsum board located above suspended ceilings, the fire-rated ceiling or gypsum board shall be continuous over and around the fixture housing and outlet box. Coordinate the ceiling and fixture installations to insure a continuous fire rated ceiling.

### 3.5 FINALLY

- A. Remove dirt and debris from enclosures.
- B. Clean photometric control surfaces as recommended by manufacturer.
- C. Clean finishes and touch up damage.
- D. Relamp luminaires that have failed lamps at Substantial Completion and all lamps that have been energized during construction for more than 500 hours.

END OF SECTION

26 51 00 -6

## SECTION 27 10 05

### CONDUIT FOR TELEPHONE/DATA AND TV RACEWAY SYSTEM

#### PART 1 GENERAL

##### 1.1 WORK INCLUDED

- A. Telephone/Data and TV raceway system.

##### 1.2 RELATED WORK

- A. Section 26 05 19: Wires and Cable.
- B. Section 26 05 34: Conduit.
- C. Section 26 05 37: Outlet and Pull Boxes.
- D. Section 26 05 53: Identification.

##### 1.3 SYSTEM DESCRIPTION

- A. At TV locations, provide a 4" outlet box and plaster ring with 3/4" raceway to above a drop ceiling in an accessible area. Leave a pull string in each raceway. End each stub up with a 90-degree elbow. Mount as shown on the plans.
- B. At all telephone/data locations, provide a 4" outlet box and plaster ring with 1" raceway to an accessible area above a ceiling. Leave a pull string in each raceway. End each stub-up with a 90-degree elbow.
- C. Provide a system of cable tray as indicated on the drawings. Provide a system of J-hooks on 4' centers in order to route data cabling to the cable tray in the corridor

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Conduit: Refer to Section 26 05 34.
- B. Outlet and Pull Boxes: Refer to Section 26 05 37.

#### PART 3 EXECUTION

##### 3.1 INSTALLATION

- A. Provide an insulated throat connector or plastic bushing where raceways are stubbed out above the ceiling, including a 90-degree elbow on the end of the conduit.

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- B. Provide a stainless steel blank cover plate for any outlet location which is not to be used. Allow for this quantity to be 50% of total data outlets.
- C. Provide conduit for all low voltage wiring which is installed in areas which have no ceiling or hard ceiling.
- D. All device plates are to be stainless steel.

END OF SECTION

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Washington County  
Sheriff's Office Interior Remodel  
Fayetteville, Arkansas

## SECTION 28 31 06

### EXISTING FIRE ALARM SYSTEM

#### PART 1 GENERAL

##### 1.1 SCOPE AND RELATED DOCUMENTS

- A. The work covered by this section of the specifications includes the furnishing of all labor, equipment, materials, and performance of all operations in connection with the installation of the Fire Alarm System as shown on the drawings and as herein specified.
- B. The requirements of the conditions of the Contract, Supplementary Conditions and General Requirements, apply to the work specified in this section.
- C. The complete installation is to conform to the applicable sections of NFPA-72, Local Code Requirements and National Electrical Code with particular attention to Article 760 and all other applicable regulatory requirements.
- D. This Contractor is to modify the system design as necessary to be Code compliant and compliant with the local Authority Having Jurisdiction.
- E. The work covered by this section of the specifications is to be coordinated with the related work as specified elsewhere under the project specifications.

##### 1.2 REGULATORY REQUIREMENTS

- A. The system and all associated operations shall be installed in accordance with the following:
  - 1. Guidelines of the following Building Code: IBC.
  - 2. NFPA 72, National Fire Alarm Code.
  - 3. NFPA 70, National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
  - 4. Other applicable NFPA standards.
  - 5. Local Jurisdictional Adopted Codes and Standards.
  - 6. ADA Accessibility Guidelines.
- B. Equipment: All devices, combinations of devices, notification appliances, and equipment, shall be listed for the purpose for which they are used and shall be

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installed in compliance with applicable codes and standards.

- C. Type of System: The control panel is an existing Edwards EST 4. Field verify existing conditions.

### 1.3 SYSTEM DESCRIPTION

- A. Fire Alarm System:

- 1. Provide all devices and wiring necessary to connect to the existing control panel.

### 1.4 QUALIFICATIONS

- A. Installer: The installation organization shall be a company specializing in the installation of detection and alarm systems. This organization shall have a minimum of 10 years experience with installation of fire detection and alarm systems. The fire alarm system shall be installed by NICET certified installers, one employee being Nicet Level III or greater.

### 1.5 SUBMITTALS

- A. Submit manufacturer product data sheets for all proposed devices and equipment.
- B. Provide wiring diagrams, equipment ratings, dimensions, and finishes for all proposed devices and equipment.
- C. If submittals, upon review by the Owner and/or the Owners Representative, are found not to conform with the performance, type and quality of products as well as all other requirements of these specifications, the Contractor shall be required to resubmit. The Contractor shall be responsible for the Owner's extra expenses for subsequent review(s) of rejected submittals. Such extra fees shall be deducted from payments by the Owner to the Contractor. Approval of the submittals by the Owner shall, in no case, relieve the Contractor of the responsibility to meet the requirements of this specification.

### 1.6 PROJECT RECORD (AS-BUILT) DRAWINGS

- A. The Contractor shall provide and maintain on the site an up-to-date record set of approved shop drawings.
- B. Record drawings shall include location of end-of-line device locations.
- C. Upon completion of the work, and final acceptance by the local authority, the Contractor shall submit record drawings to the Owner and the Engineer.

## 1.7 OPERATION AND MAINTENANCE DATA

- A. Submit Manufacturer data sheets for all equipment installed.
- B. Include operating, installation, and routine maintenance instructions.
- C. Include Manufacturer's letter stating the date of installation on which the system is operational.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Same as or compatible with existing equipment.

### 2.2 MANUAL PULL STATIONS

- A. Description: Double-action type, red LEXAN or metal finished in red, with molded, raised-letter operating instructions of contrasting color. Station will mechanically latch upon operation and remain so until manually reset by opening with a key common with the control units.
- B. Protective Shield: Provide a tamperproof, clear LEXAN shield and red frame that easily fit over manual pull stations. When shield is lifted to gain access to the station, a battery powered piercing warning horn shall be activated. The horn shall be silenced by lowering and realigning the shield. The horn shall provide 85dB at 10 feet and shall be powered by a 9 VDC battery.

### 2.3 SMOKE DETECTORS

- A. General: Comply with UL 268, "Smoke Detectors for Fire Protective Signaling Systems." Include the following features:
  - 1. Factory Nameplate: Serial number and type identification.
  - 2. Operating Voltage: 24 VDC, nominal.
  - 3. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore normal operation.
  - 4. Plug-In Arrangement: Detector and associated electronic components are mounted in a module that connects to a fixed base with a twist-locking plug connection. Base shall provide break-off plastic tab that can be removed to engage the head/base locking mechanism. No special tools shall be required to remove head once it has been locked. Removal of the detector head shall interrupt the supervisory circuit of the fire alarm detection loop and cause a trouble signal

at the control unit.

5. Environmental Compensation: The detector shall provide a software filtering process that automatically compensates for environmental factors and component aging that affect detector operation.
  6. Each detector head shall contain an LED that will flash each time it is scanned by the Control Unit (once every 4 seconds). In alarm condition, the detector head LED shall be on steady.
  7. Each detector base shall contain a magnetically actuated test switch to provide for easy alarm testing at the detector location and for accessing detector status information. Off-normal conditions shall be indicated by specific identifiable detector LED pulse patterns.
- B. Smoke Detectors: A maintenance and testing service providing the following shall be included with the base bid:
1. Biannual sensitivity reading and logging for each smoke sensor.
  2. Scheduled biannual threshold adjustments to maintain proper sensitivity for each smoke sensor.
  3. Threshold adjustment to any smoke sensor that has alarmed the system without the presence of particles of combustion.
  4. Scheduled biannual cleaning or replacement of each smoke detector or sensor within the system.
  5. Semi-annual functional testing of each smoke detector or sensor using the manufacturer's calibrated test tool.
  6. Written documentation of all testing, cleaning, replacing, threshold adjustment, and sensitivity reading for each smoke detector or sensor device within the system.
  7. The initial service included in the bid price shall provide the above listed procedures for a period of five years after owner acceptance of the system.
- C. Type: Smoke detectors shall be of the photoelectric type. Where acceptable per manufacturer specifications, ionization type detectors may be used.
- D. Duct Smoke Detector: Photoelectric type, with sampling tube of design and dimensions as recommended by the manufacturer for the specific duct size and installation conditions where applied.

1. The detector shall provide on-board sensitivity drift compensation and dirt accumulation tracking.
2. A magnetic test function shall initiate an alarm and provide detailed diagnostic information using the detector status LED.
3. The detector shall provide a multi-function status LED indicator that indicates off-normal conditions by specific identifiable detector LED pulse patterns.
4. The duct housing shall provide a supervised relay driver circuit for driving up to 15 relays with a single "Form C" contact rated at 7A@ 28VDC or 10A@ 120VAC or an auxiliary alarm relay with two "Form C" contacts rated at 1A@ 28VDC or ½A@ 120 VAC resistive. This auxiliary relay operates when the detector reaches its alarm threshold. Relay shall be mounted within 3 feet of HVAC control circuit.
5. Duct housing shall provide a relay control trouble indicator yellow LED.
6. Compact duct housing shall have a transparent cover to monitor for the presence of smoke. Cover shall secure to housing by means of four (4) captive fastening screws.
7. Duct housing shall provide two (2) test ports for measuring airflow and for testing. These ports will allow aerosol injection in order to test the activation of the duct smoke detector.
8. For maintenance purposes, it shall be possible to clean the duct housing sampling tubes by accessing them through the duct housing front cover.
9. Each duct detector shall have a Remote Test Station with an alarm LED and test switch.

## 2.4 HEAT DETECTORS

- A. Thermal Detector: Combination fixed-temperature and rate-of-rise unit with plug-in base and alarm indication lamp; 135-deg F fixed-temperature setting except as indicated.
- B. Thermal detector shall be of the epoxy encapsulated electronic design. It shall be thermistor-based, rate-compensated, self-restoring and shall not be affected by thermal lag.



## 2.5 MAGNETIC DOOR HOLDERS

- A. Description: Units shall be listed to UL 228. Units are equipped for wall or arm mounting as indicated and are complete with matching doorplate. Unit shall operate from a 120VAC, a 24VAC or a 24VDC source, and develops a minimum of 25 lbs. holding force.
- B. Material and Finish: Match door hardware.
- C. Provide at all fire wall doors. Coordinate with the Architectural Life Safety Plan.
- D. Provide type as appropriate for door style and location.

## 2.6 STANDARD ALARM NOTIFICATION APPLIANCES

- A. Horn: Piezoelectric type horn shall be listed to UL 464. The horn shall have a minimum sound pressure level of 85 dBA @ 24VDC. The horn shall mount directly to a standard single gang, double gang or 4" square electrical box, without the use of special adapter or trim rings.
- B. Visible/Only: Strobe shall be listed to UL 1971. The V/O shall consist of a xenon flash tube and associated lens/reflector system. The V/O enclosure shall mount directly to standard single gang, double gang or 4" square electrical box, without the use of special adapters or trim rings. V/O appliances shall be provided with different minimum flash intensities of 15cd, 75cd and 110cd. Provide a label inside the strobe lens to indicate the listed candela rating of the specific Visible/Only appliance.
- C. Audible/Visible: Combination Audible/Visible (A/V) Notification Appliances shall be listed to UL 1971 and UL 464. The strobe light shall consist of a xenon flash tube and associated lens/reflector system. Provide a label inside the strobe lens to indicate the listed candela rating of the specific strobe. The horn shall have a minimum sound pressure level of 85 dBA @ 24VDC. The audible/visible enclosure shall mount directly to standard single gang, double gang or 4" square electrical box, without the use of special adapters or trim rings.
- D. Notification Appliance Circuit provides synchronization of strobes at a rate of 1Hz and operates horns with a Temporal Code Pattern operation. The circuit shall provide the capability to silence the audible signals, while the strobes continue to flash, over a single pair of wires. The capability to synchronize multiple notification appliance circuits shall be provided.
- E. Accessories: The contractor shall furnish the necessary accessories.
- F. Provide ceiling mounted devices where indicated on the plans.

## 2.7 FIRE ALARM WIRE AND CABLE

- A. All wire and cable shall be in strict compliance with local codes and the provisions of NEC Article 760 for Power-limited Fire Alarm Circuits.

## PART 3 EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Install system components and all associated devices in accordance with applicable NFPA Standards and manufacturer's recommendations.
- B. Installation personnel shall be supervised by persons who are qualified and experienced in the installation, inspection, and testing of fire alarm systems. Examples of qualified personnel shall include, but not be limited to, the following:
  - 1. Factory trained and certified personnel.
  - 2. National Institute of Certification in Engineering Technologies (NICET) fire alarm level III certified personnel.
  - 3. Personnel licensed or certified by state or local authority.

### 3.2 EQUIPMENT INSTALLATION

- A. Furnish and install a complete Fire Alarm System as described herein and as shown on the plans. Include sufficient manual stations, automatic fire detectors, smoke detectors, audible and visible notification appliances, wiring, terminations, electrical boxes, and all other necessary material for a complete operating system.
- B. Device Location-Indicating Lights: Locate in the public space immediately adjacent to the device they monitor.
- C. All necessary devices and wiring which are necessary for a complete, acceptable system shall be supplied regardless whether shown on the plans or not.
- D. Provide zone cards and all other equipment necessary for expansion.
- E. Provide wire guards to protect all devices installed in gymnasiums and areas subject to physical abuse.

### 3.3 WIRING INSTALLATION

- A. System Wiring: Wire and cable shall be a type listed for its intended use by an approval agency acceptable to the Authority Having Jurisdiction and shall be installed in accordance with the appropriate articles from the current approved edition of NFPA 70: National Electric Code (NEC); National Fire Protection Association; Most Recent

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Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

- B. Contractor shall obtain from the Fire Alarm System Manufacturer written instruction regarding the appropriate wire/cable to be used for this installation. No deviation from the written instruction shall be made by the Contractor without the prior written approval of the Fire Alarm System Manufacturer.
- C. Color Coding: Color-code fire alarm conductors differently from the normal building power wiring. Use one color code for alarm initiating device circuits wiring and a different color code for supervisory circuits. Color-code notification appliance circuits differently from alarm-initiating circuits. Paint fire alarm system junction boxes and covers red.
- D. Wire installed in open ceiling areas shall be installed in conduit.

### 3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Provide services of a factory-authorized service representative to supervise the field assembly and connection of components and the pretesting, testing, and adjustment of the system.
- B. Service personnel shall be qualified and experienced in the inspection, testing, and maintenance of fire alarm systems. Examples of qualified personnel shall be permitted to include, but shall not be limited to, individuals with the following qualifications:
  - 1. Factory trained and certified.
  - 2. National Institute for Certification in Engineering Technologies (NICET) fire alarm certified, NICET Level III minimum.
  - 3. Certified by a state or local authority.
  - 4. Trained and qualified personnel employed by an organization listed by a national testing laboratory for the servicing of fire alarm systems.
- C. Pretesting: Determine, through pretesting, the conformance of the system to the requirements of the Drawings and Specifications. Correct deficiencies observed in pretesting. Replace malfunctioning or damaged items with new and retest until satisfactory performance and conditions are achieved.
- D. Final Test Notice: Provide a 10-day minimum notice in writing when the system is ready for final acceptance testing.

- E. Minimum System Tests: Test the system according to the procedures outlined in NFPA 72.
- F. Retesting: Correct deficiencies indicated by tests and completely retest work affected by such deficiencies. Verify by the system test that the total system meets the Specifications and complies with applicable standards.
- G. Report of Tests and Inspections: Provide a written record of inspections, tests, and detailed test results in the form of a test log.
- H. Final Test, Certificate of Completion, and Certificate of Occupancy:
  - 1. Test the system as required by the Authority Having Jurisdiction in order to obtain a certificate of occupancy.

### 3.5 CLEANING AND ADJUSTING

- A. Cleaning: Remove paint splatters and other spots, dirt, and debris. Clean unit internally using methods and materials recommended by manufacturer.
- B. Occupancy Adjustments: When requested within one year of date of Substantial Completion, provide on-site assistance in adjusting sound levels and adjusting controls and sensitivities to suit actual occupied conditions. Provide up to three visits to the site for this purpose.

### 3.6 TRAINING

- A. Provide the services of a factory-authorized service representative to demonstrate the system and train Owner's maintenance personnel as specified below.
  - 1. Train Owner's maintenance personnel in the procedures and schedules involved in operating, troubleshooting, servicing, and preventive maintaining of the system. Provide a minimum of eight hours training.
  - 2. Schedule training with the Owner at least seven days in advance.

END OF SECTION