



## Hurst-Rosche, Inc.

561 Murfreesboro Pike, Nashville Tn. 37210  
618.998.0075 [www.hurst-rosche.com](http://www.hurst-rosche.com)

# PROJECT MANUAL

OCTOBER 10, 2019

## PROJECT

SBC No. 166/032-03-2018  
Pellissippi State Community College  
Student Recreation Center  
Fabric Replacement

## COUNTY

KNOX

## OWNER

Tennessee Board of Regents

## DESIGNER/ CONSULTING ENGINEERS

Hurst-Rosche, Inc.  
561 Murfreesboro Pike, Nashville Tn. 37210  
618.998.0075



# Seals Page



Specifier: Jeremy Sargent

Signed: October 10, 2019

Expiration: May 31, 2020



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PELLISSIPPI STATE COMMUNITY COLLEGE  
KNOXVILLE, KNOX CO., TENNESSEE  
SBC No. 166/032-03-2018**

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**00 11 16 – INVITATION TO BID**

**PROJECT:**

Student Recreation TCenter Fabric Replacement  
SBC Number 116/032-03-2018  
Pellissippi State Community College  
Knoxville, Tennessee 37933-0990

**INVITATION:**

The State of Tennessee is inviting General Contractor bids for the Work of this project. Examine documents at the Designer's office or Plan Rooms on or after October 16, 2019.

Bidding Documents in PDF format may be obtained at no cost from the following source.  
[www.hurst-rosche.com](http://www.hurst-rosche.com)

Entities obtaining Bidding Documents become Bidders of Record for notifications. Bidders of Record may purchase hard copies of Bidding Documents from the same source (nonrefundable).

Bidders shall be licensed and qualified per state law. Five percent (5%) Bid Security is required in the form of a Bid Bond or check (certified or cashier's) made payable to State of Tennessee. Non-discrimination policy applies.

**BIDS RECEIVED AT:**

Pellissippi State Community College  
Department of Purchasing  
J.L. Goins Administration Building  
10915 Hardin Valley Road  
Knoxville, Tennessee 37933-0990  
Until TBA, local time  
On November 13, 2019.

**PRE-BID CONFERENCE AT:**

Pellissippi State Community College  
Physical Plant  
Conference Room  
10915 Hardin Valley Road  
Knoxville, Tennessee 37933-0990  
At TBA, local time  
On TBA

**PLAN ROOMS:**

Builders Exchange of Tennessee - [www.bxtn.com](http://www.bxtn.com) (866) 525-0443

**00 11 16 – INVITATION TO BID**

DESIGNER:

Hurst-Rosche, Inc.  
561 Murfreesboro Pike  
Nashville, TN 37210  
618-998-0075

END OF SECTION

## 00 21 13 – INSTRUCTIONS TO BIDDERS

### PART 1 - GENERAL

#### 1.01 BIDDING DOCUMENTS

- A. Bidding Documents may be obtained by Bidders and Subcontractors as described in the Invitation to Bid.
- B. Bidders of Record will be issued subsequent addenda.

#### 1.02 EXAMINATION

- A. Bidders shall carefully examine site and documents to obtain first-hand knowledge of existing conditions and Work proposed.
- B. Contractor will not be given extra payment for conditions which can be determined by examining site and documents.

#### 1.03 QUESTIONS

- A. Bidders shall submit questions about bidding documents to Designer in writing. Replies will be issued to Bidders of Record by addenda and will become part of Contract Documents. Designer and Owner will not make oral clarifications.
- B. Questions shall be received by Designer at least six calendar days before bid opening date.
- C. Normal practice is that no addenda affecting pricing will be issued less than three calendar days before bid opening date.

#### 1.04 SUBSTITUTIONS

- A. Substitution requests before receipt of bids shall be prepared in accordance with 01 25 13 Product Substitution Procedures.
- B. Substitution requests before receipt of bids shall be received ten calendar days before date set to receive bids. However, regardless of the date received, consideration of substitution requests is not an obligation of the Designer or Owner and the Designer will determine if sufficient time is available for evaluation of the request.
- C. Acceptable substitutions will be identified in addenda.
- D. Bidders submitting bids in reliance upon a substitution when the substitution has not been approved prior to bidding do so at their own risk.

#### 1.05 LICENSING AND QUALIFICATIONS

- A. Bidders shall be familiar with the Contractors Licensing Act of 1976, as currently amended (codified in Tennessee Code Annotated (TCA) § 62-6-101, et seq.). A contract will not be awarded to a bidder whose bid is in conflict with State licensing law.
- B. Bidders with five or more employees are required by TCA § 50-9-113 to submit a completed Section 00 45 21 Drug-Free Workplace Affidavit with their bid that attests they have a complying drug-free workplace program.
- C. In compliance with TCA § 50-9-114 bidders are advised that the Owner does not operate a certified drug-free workplace program that serves for compliance with TCA § 50-9-113.

## 00 21 13 – INSTRUCTIONS TO BIDDERS

- D. Bids submitted shall not include a contractor or subcontractor disqualified from participating in State Building Commission projects. The State Architect maintains a list of those that are disqualified.
- E. The bidder and its subcontractors shall not knowingly utilize the services of an illegal immigrant in the performance of the Work, and shall not knowingly utilize the services of any subcontractor, sub-subcontractor, or consultant who utilizes the services of an illegal immigrant in the performance of the Work.
- F. In compliance with the Iran Divestment Act bids submitted shall not include a contractor or subcontractor on the list created pursuant to TCA § 12-12-106.

### 1.06 BID FORM

- A. Make bids on an unaltered Bid Form. Submit one Bid Form. Failure to completely fill out Bid Form may cause bid to be rejected.
- B. To indicate availability of an Add Alternate at no additional charge, write "No Charge" in the space. Additional stipulations or qualifications on Bid Form may cause bid to be rejected.
- C. Bid Form shall be signed by person or persons legally authorized to bind Bidder to contract.

### 1.07 BID SECURITY

- A. Bid Security is required in the amount of five percent (5%) of total amount of bid, including alternates, in the form of a Bid Bond or check (certified or cashier's) made payable to State of Tennessee.
- B. Bid Bonds shall be issued by Surety company licensed to do business in Tennessee by Tennessee Department of Commerce and Insurance, and shall have certified and current Power-of-Attorney for Attorney-in-Fact attached.
- C. Owner may retain Bid Security of bidders to whom award is being considered until either (a) Contract has been executed, or (b) specified time has elapsed so that bid is not binding, or (c) bid has been rejected. If Bidder refuses to enter into Contract or fails to furnish all required attachments properly executed, the amount of Bid Security shall be forfeited to Owner as liquidated damages, not as penalty.

### 1.08 BID SUBMITTAL

- A. Submit Bid Form, with required attachments, enclosed and sealed in a 9 inch by 12 inch Bid Envelope with Bid Envelope cover information as provided in Section 00 47 13 attached to the Bid Envelope. Bidder shall fill in blank spaces on face of Envelope except the blank space provided for Designer's approval.
- B. If any work, regardless of dollar value, is required for any or of the subcontract trades listed on the Bid Envelope form, list subcontractor(s) that will perform that work. If Bidder will perform that work with Bidder's own forces, fill in Bidder's name as subcontractor. If no work is required in a category, write "None Required" in space provided for subcontractor(s). If acceptance of Alternate or combination of Alternates changes subcontractor, indicate change on Bid Envelope.
- C. Provide State contractor license number, expiration date, and applicable classifications for Bidder and listed subcontractors, as applicable by State licensing law.

## 00 21 13 – INSTRUCTIONS TO BIDDERS

- D. Bidders are solely responsible for ensuring that bids are received by the time and at the place identified for receipt of bids. The bid opening time shall be established by the timepiece of the Owner's representative. Bids received late will be returned unopened.
- E. A bid sent by mail or courier shall be enclosed in an envelope clearly marked "Bid Envelope Enclosed".

### 1.09 MODIFICATION AND WITHDRAWAL PRIOR TO CLOSE OF BIDDING

- A. **Modification:** Bids, once submitted, may be modified before the scheduled opening time only upon receipt of a written modification signed by a person legally authorized to bind Bidder to contract. Modification to a bid may be made as an "Add" or "Deduct" only. Modification to bid may be written on the Bid Envelope with the signature of an authorized representative of the Bidder also written on the Bid Envelope. Modification shall indicate only the amount of change, clearly identified as an "Add" or "Deduct", and not indicate either the prior or resulting bid amount.
- B. **Withdrawal:** Bids, once submitted, may be withdrawn before the scheduled opening time only upon receipt of a written withdrawal request signed by a person legally authorized to bind Bidder to contract.

### 1.10 POST-BID WITHDRAWAL OF BID FROM CONSIDERATION DUE TO MISTAKE

A request to withdraw a bid due to a mistake shall follow the Policy and Procedure of the State Building Commission. In addition to the requirements therein, such requests shall be delivered in writing to the Owner not later than twenty-four hours after the time fixed for receipt and opening of bids.

### 1.11 CONSIDERATION OF BIDS

- A. To be considered, bids shall be made in accordance with these Instructions to Bidders. Failure to comply with these requirements may cause bid to be rejected.
- B. The Owner reserves right to: reject Unit Prices proposed in a bid without invalidating other portions of bid; reject a bid which does not provide all required Unit Prices; waive informalities; and, reject any or all bids.
- C. It is Owner's intent to award contract based upon lowest evaluated responsive bid submitted by responsible Bidder for Base Bid plus Alternates (if any) taken in order up to, but not to exceed the Bid Target. If the Base Bid of all bidders exceeds the established Bid Target, the low Bidder is determined by the lowest Base Bid submitted by a responsible Bidder irrespective of any Alternates (if any) bid. When Alternates are included in bidding, Bid Target will be announced at bid opening prior to opening bids. Alternates may be accepted or rejected at Owner's discretion, provided that final combination of Base Bid and accepted Alternates does not change low Bidder as established by above method.
- D. In the event of tie bids, preference will be given to in-State bidder over out-of-State bidder; and, if a tie still exists, successful Bidder will be determined by chance, e.g. a coin toss.

### 1.12 POST-BID INFORMATION

Each Bidder shall be prepared, if requested by Owner or Designer, to present, within ten days of the request, evidence of experience, qualifications, and financial ability to carry out the terms of the contract.

## **00 21 13 – INSTRUCTIONS TO BIDDERS**

### **1.13 BONDS**

- A. If the initial Contract Sum as awarded exceeds \$100,000, the successful Bidder shall provide Contract Bond in an amount of 100 percent of Contract Sum and in accordance with the requirements and form exhibited as Section 00 61 13.
- B. The successful Bidder shall furnish, if applicable, a Three Year Roof Bond in an amount stipulated on the Bid Form and in accordance with the requirements and the form exhibited as Section 00 61 43.

### **1.14 EXECUTION OF THE CONTRACT**

- A. If a Bidder is presented the written Agreement form for signing, then that Bidder shall deliver to the Owner, within ten calendar days after presentation, the required number of counterparts of the signed Agreement Form, Contract Bond, Roof Bond (if required), and certificates of insurance, ACH Credits Form, and W-9 federal tax form.
- B. Failure of the Bidder to return the Agreement as stipulated above shall entitle the Owner to require forfeiture of Bid Security and to proceed with award to the next lowest responsive Bidder.

### **1.15 AWARD OF THE CONTRACT**

Presentation of Agreement form by Owner to Bidder for signature does not constitute award of Contract. Contract shall not be considered awarded until Bidder has received a fully executed Agreement.

### **1.16 DIVERSITY PARTICIPATION**

- A. It is the express desire of the Owner and the State Building Commission to include an emphasis on diversity in its contractual relationships with contractors for the construction, demolition or renovation of State projects under jurisdiction of the Commission. The Commission acknowledges that firms who demonstrate and embrace diversity within their programs and policies are assisting the State in achieving its goals in building a more reflective marketplace of the community within this State.
- B. It is a requirement of all successful Bidders or proposers on projects under the jurisdiction of the State Building Commission that they report to the State the names and amounts of contracts entered into with diversity-owned businesses on their contract with the State in order for the State to collect data on such participation.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

## **00 22 13 – PRE-BID MEETING**

Pre-bid meeting will be held on TBA at TBA.

### **PRE-BID MEETING LOCATION:**

Pellissippi State Community College  
Department of Purchasing  
J.L. Goins Administration Building  
10915 Hardin Valley Road  
Knoxville, Tennessee 37933-0990

Meeting will conclude with a visit to project site.

**END OF SECTION**





**00 41 13 – BID FORM**

**TO:** State of Tennessee      **FROM BIDDER:** \_\_\_\_\_

**FOR:**

Project Title: Pellissippi SCC Student Recreation Center Fabric Replacement

Project SBC No.: 166/032-03-2018

A. The Bidder hereby acknowledges, attests, certifies, warrants, and assures that:

1. Bidder has received, read and understands the Bidding Documents and this bid is made in accordance therewith.
2. Bidder has visited the site and become familiar with the local conditions under which the Work is to be performed and has correlated all observations with the requirements of the Bidding Documents.
3. Documents identified as "Information Available to Bidders" are prepared solely for the Designer's use in design of this Work and have not been relied upon in the preparation of this bid. The use and interpretation of such information for any purpose is entirely the responsibility of the using party.
4. Bidder shall not utilize the services of a contractor or subcontractor disqualified from participating in State Building Commission projects.
5. Bidder shall not knowingly utilize the services of an illegal immigrant in the performance of this Contract and shall not knowingly utilize the services of any subcontractor or consultant who will utilize the services of an illegal immigrant in the performance of this Contract.
6. In compliance with the Iran Divestment Act the Bidder is not on the list created pursuant to Tennessee Code Annotated (TCA) § 12-12-106 and shall not utilize any subcontractor on that list.
7. Bid Security, in the amount of five percent (5%) of the total amount of bid, including Alternates, is attached hereto.
8. A Drug-Free Workplace Affidavit, in the form of Section 00 45 21, is attached hereto.
9. Failure to complete this Bid Form, provide required attachments, or comply otherwise with instructions to Bidders, may be cause for rejection of bid.
10. The person who signs this bid on behalf of the Bidder is legally empowered to bind the Bidder to a Contract.
11. The following statement is (mark the one that is applicable)  True       False:  
The Bidder and/or any of the Bidder's employees, agents, independent contractors and/or proposed Subcontractors have been convicted of, pled guilty to, or pled nolo contendere to any contract crime involving a public contract.
12. Bidder has received the following addenda:  
Addendum No. \_\_\_\_\_ dated \_\_\_\_\_.      Addendum No. \_\_\_\_\_ dated \_\_\_\_\_.  
Addendum No. \_\_\_\_\_ dated \_\_\_\_\_.      Addendum No. \_\_\_\_\_ dated \_\_\_\_\_.

**00 41 13 – BID FORM**

**PAGE 2 FROM BIDDER:** \_\_\_\_\_

B. The Bidder agrees to:

1. Honor this bid for 45 days following the date of the scheduled opening of bids.
2. Enter into and execute a contract, if presented on the basis of this bid, and to furnish certificates(s) of insurance, bond(s), and other documents related to the contract as required, including, if the initial Contract Sum as awarded exceeds \$100,000, the Contract Bond.
3. Accomplish the Work in accordance with the Contract Documents.
4. Furnish Three Year Roof Bond in the form of Section 00 61 43 in the amount of: Roof Bond Not Required.
5. Achieve Substantial Completion of the Work in accordance with the number of calendar days Contract Time set forth, allotted from and including the date stipulated in the Notice to Proceed; and, accept the conditions for Liquidated Damages in the amount set forth per calendar day.

Phase	Commencement	Contract Time	Liquidated Damages
ALL	Notice to Proceed for All Work	210 Days	\$500 Per Day
		Days	\$ Per Day
		Days	\$ Per Day
		Days	\$ Per Day

C. BASE BID: The Bidder agrees to complete the Work of the Base Bid for this project for the lump sum of the following amount (In both words and figures. Figures prevail. Words clarify at Owner's discretion.):

\_\_\_\_\_ and \_\_\_\_\_/100ths Dollars  
 \$ \_\_\_\_\_

D. ALTERNATES: The Bidder agrees to include Work of the following Alternate(s), as specified in Section 01 23 00 Alternates, for the additional lump sum(s) of the following amount(s) (In both words and figures. Figures prevail. Words clarify at Owner's discretion.):

ALTERNATE No.1: Overhead Glass Door  
 \_\_\_\_\_ and \_\_\_\_\_/100ths Dollars  
 \$ \_\_\_\_\_

ALTERNATE No. 2: High-Volume, Low-Speed Fans  
 \_\_\_\_\_ and \_\_\_\_\_/100ths Dollars  
 \$ \_\_\_\_\_

ALTERNATE No. 3: Not Applicable  
 \_\_\_\_\_ and \_\_\_\_\_/100ths Dollars  
 \$ \_\_\_\_\_

ALTERNATE No. 4: Not Applicable  
 \_\_\_\_\_ and \_\_\_\_\_/100ths Dollars  
 \$ \_\_\_\_\_

**00 41 13 – BID FORM**

E. UNIT PRICES: The Bidder agrees to include work in the Base Bid and Alternates as specified for the Quantity Allowance of Unit Price Items and propose, subject to Owner acceptance, the following Unit Prices for inclusion in the Agreement as specified in Section 01 22 13 Unit Prices:

Not Applicable.

Item No.	Unit Price per Unit	Unit	Name, Work Included

F. BID SUBMITTAL:

This bid is submitted by:

Authorized Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name, Title: \_\_\_\_\_

On behalf of:

Bidder Name: \_\_\_\_\_

Bidder's Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Bidder's Phone: \_\_\_\_\_

Bidder's Fax: \_\_\_\_\_

Bidder's Email: \_\_\_\_\_

END OF SECTION



**00 45 21 – DRUG-FREE WORKPLACE AFFIDAVIT**

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

COUNTY OF \_\_\_\_\_

The undersigned, principal officer of \_\_\_\_\_, the Contractor, an employer of five or more employees contracting with \_\_\_\_\_, the Owner, to provide construction services, hereby states under oath as follows:

1. The undersigned is a principal officer of the Contractor and is duly authorized to execute this Affidavit on behalf of the Contractor.
2. The Contractor submits this Affidavit pursuant to Tennessee Code Annotated (TCA) § 50-9-113, which requires each employer with five or more employees receiving pay who contracts with the state to provide construction services to submit an affidavit stating that such employer has a drug-free workplace program that complies with TCA Title 50, Chapter 9.
3. The Company is in compliance with TCA § 50-9-113.

Further affiant saith not.

\_\_\_\_\_  
Principal Officer

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

COUNTY OF \_\_\_\_\_

Before me personally appeared \_\_\_\_\_, with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence), and who acknowledged that such person executed the foregoing affidavit for the purposes therein contained.

Witness my hand and seal at office this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

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

My commission expires:\_\_\_\_\_

END OF AFFIDAVIT



**00 47 13 – CONSTRUCTION BID ENVELOPE**

**Bid to the State of Tennessee for Project:**

Project Title: \_\_\_\_\_  
 SBC Number: \_\_\_\_\_  
 Institution: \_\_\_\_\_  
 City/County: \_\_\_\_\_  
 Project Designer: \_\_\_\_\_

**Any blank spaces may cause bid to be unacceptable and rejected.**  
 Provide state contractor license number, expiration date, and classification  
 for Bidder and listed subcontractors as applicable.  
 Provide all names as used for licensing.

---

Bidder Identification:  
 Bidder: \_\_\_\_\_  
 Address: \_\_\_\_\_

Tennessee Contractor License Information:  Or check here if Bidder is unlicensed.

License Number \_\_\_\_\_  
 License Classification \_\_\_\_\_  
 Applicable to Project \_\_\_\_\_

License Expiration Date \_\_\_\_\_ Dollar Limit: \$\_\_\_\_\_.

Subcontractors to be used on this Project (or Bidder if Bidder is to perform the work):

- If any work, regardless of dollar value, is required for trades below, list subcontractor(s) that will perform that work, or, if Bidder will perform work in that category with Bidder's own forces, fill in Bidder's name as subcontractor.
- If no work is required in a subcontractor category, write "None Required".
- If the monetary amount of a subcontractor's work is such that no license is require, write "N/A" in the license number column, but still write name.

	Name	License Number	Expires	Classification
Electrical				
Geothermal				
HVAC				
Masonry				
Plumbing				
Roofing				

This Bid Envelope approved for public opening \_\_\_\_\_  
 Signature of Designer or its representative





# Agreement

## Between Owner and Contractor

Where the Basis of Payment is a  
Stipulated Sum.

---

### AGREEMENT

made as of the <<Number, e.g. "2nd">> day of <<Month>>  
in the year of <<Year number in words>>.

### BETWEEN THE OWNER:

State of Tennessee, via the Contracting Agency:  
<<State Procurement Agency>>  
<<Street or P.O. Box>>  
<<City, State, Zip Code>>

### AND THE CONTRACTOR:

<<Contractor Name>>  
<<Street or P.O. Box>>  
<<City, State, Zip Code>>

ACH Address: <<Street or P.O. Box>>  
<<City, State, Zip Code>>

### THE PROJECT:

<<SBC Number>>  
<<Campus or Institution Name>>  
<<Project Title Designated by Owner>>

### THE DESIGNER:

<<Designer Name>>  
<<Street or P.O. Box>>  
<<City, State, Zip Code>>

**THE OWNER AND THE CONTRACTOR AGREE AS SET FORTH BELOW.**

## **00 52 13 – AGREEMENT**

### **ARTICLE 1 – THE WORK AND THE CONTRACT DOCUMENTS**

- 1.1 The Contractor shall perform all the Work required by the Contract Documents for the Project identified on page one.
- 1.2 The Contract Documents are identified in the Conditions of the Contract (General, Supplementary, and other Conditions). These form the Contract and constitute the entire agreement between the Owner and the Contractor, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. An enumeration of the Contract Documents appears in paragraph 1.4.
- 1.3 Terms used in this Agreement which are defined in the Conditions of the Contract shall have the meanings designated in those Conditions.
- 1.4 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated as follows:
  1. This Agreement.<<Continued list of Contract Documents including applicable drawings, project manual, and addenda>>

## **00 52 13 – AGREEMENT**

### **ARTICLE 2 – TIME OF COMMENCEMENT AND SUBSTANTIAL COMPLETION**

- 2.1 The Work to be performed under this Contract shall be commenced on the date stipulated in the Notice to Proceed; and, subject to authorized adjustments, Substantial Completion shall be achieved in  
<<Number of calendar days from and including the date stipulated in the Notice to Proceed>>
- 2.2 Liquidated Damages, as set forth in the Conditions of the Contract, are  
<<Dollar amount per calendar day>>

### **ARTICLE 3 – CONTRACT SUM**

- 3.1 The Owner shall pay the Contractor in current funds for the performance of the Work, subject to Modifications as provided in the Contract Documents, the Contract Sum of  
<<Contract Sum in words>>  
(\$<<Contract Sum in numbers>>)
- 3.2 The Contract Sum is determined as follows:  
<<Listing of base bid and any alternates and total>>
- 3.3 The following Unit Prices will be used as specified:  
<<Listing or statement of none established at initial award>>

**00 52 13 – AGREEMENT**

This instrument may be executed in one or more counterparts. It shall be fully executed when each party whose signature is required has signed at least one counterpart, even though no one counterpart contains the signatures of all the parties to this instrument. Electronic, scanned or facsimile signatures shall have the same force and effect as original signatures.

**This Agreement entered into as of the day and year first written above as witnessed:**

**BY CONTRACTOR:** <<Contractor Name>>

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

**AND BY OWNER:** State of Tennessee,  
<<State Procurement Agency>>

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

Head of Higher Education Institution  
<<Name>>  
<<Title>>

Approved: \_\_\_\_\_

Head of Financial Office  
<<Name>>  
<<Title>>

Approved: \_\_\_\_\_

Head of Legal Office  
<<Name>>  
<<Title>>

Approved: \_\_\_\_\_

Head of State Procurement Agency  
<<Name>>  
<<Title>>

Approved: \_\_\_\_\_

State Architect

**END OF AGREEMENT FORM for the Project titled:**

<<SBC Number>>

<<Campus or Institution Name>>

<<Project Title Designated by Owner>>

**00 61 13 – CONTRACT BOND**

Bond No. \_\_\_\_\_

**TENNESSEE STATE BUILDING COMMISSION STANDARD FORM**

**Know all men by these presents:** that we

(hereinafter called the "Principal") and

(hereinafter called the "Surety") do hereby acknowledge ourselves indebted and securely bound and held unto

State of Tennessee

(hereinafter called the "Owner"), and in the penal sum of

good and lawful money of the United States of America, for the use and benefit of those entitled thereto, for the payment of which, well and truly to be made, we bind ourselves, our heirs, our administrators, executors, successors, and assigns, jointly and severally, firmly by these presents.

**But the condition of the foregoing obligation or bond is this:**

**Whereas,** the Owner has engaged the principal for the sum of

to complete the Work of the project titled:

SBC No.

as more fully appears in a written agreement or contract bearing the date of

a copy of which said agreement or contract is by reference hereby made a part thereof, as fully and to the same extent as if copied in length herein, and it is the desire of the Owner that the Principal shall assure all undertakings under said agreement or contract and shall assure and protect all laborers and furnishers of material on said Work both as provided by Tennessee Code Annotated Sections 4-15-102 (f)(2) and 12-4-201 through 12-4-206, and any and all amendments thereto, and shall assure the prompt payment of claims as provided by Tennessee Code Annotated Sections 12-4-207 through 12-4-208, and any and all amendments thereto. The Principal shall also comply with provisions of Tennessee Code Annotated Sections 12-4-401 through 12-4-415, and any and all amendments thereto, pertaining to the payment of the prevailing wage rate.

**00 61 13 – CONTRACT BOND**

**Now, therefore,** if the Principal shall fully and faithfully perform all undertakings and obligations under the contract hereinbefore referred to and shall fully indemnify and hold harmless the Owner from all costs and damage whatsoever which it may suffer by reason of any failure on the part of the Principal to do so, and shall fully reimburse and repay the Owner any and all outlay and expense which it may incur in making good any such default, and shall fully pay for all of the labor, material and work used by the Principal and any immediate or remote sub-contractor or furnisher of material under him in the performance of said contract, in lawful money of the United States, as the same shall become due, then this obligation or bond shall be null and void, otherwise to remain in full force and effect.

**And** for value received, it is therefore stipulated and agreed that no change, extension of time, alteration or addition to the terms of the contract or to the Work to be performed thereunder or to the specifications accompanying the same shall in any wise affect the obligation under this bond, and notice is hereby waived of any such change, extension of time, alteration or addition to the terms of the contract or to the Work or to the specifications.

**In witness whereof** the Principal has hereunto affixed its signature and Surety has hereunto caused to be affixed its corporate signature and seal, by its duly authorized officers, on this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Executed in \_\_\_\_\_ counterparts.

**Witness:**

\_\_\_\_\_  
(Name of Principal)

\_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Authorized Signature)

\_\_\_\_\_  
(Signature of Attorney-in-fact)

\_\_\_\_\_  
(Name of Signatory)

\_\_\_\_\_  
(Name of Attorney-in fact)

\_\_\_\_\_  
(Title of signatory)

\_\_\_\_\_  
(Tennessee license number of Agent or Attorney-in-fact)

\_\_\_\_\_  
(Countersignature of Agent if not same as Attorney-in-fact)

Surety Company issuing bond shall be licensed to transact business in State of Tennessee by Tennessee Department of Commerce and Insurance. Bonds shall have certified and current Power-of-Attorney for the Surety's Attorney-in-Fact attached. Attorney-in-Fact who executes bond on behalf of Surety shall be licensed by the State of Tennessee, and shall affix license number to bond; or, countersignature by a licensed agent of the State of Tennessee, and the agent's license number, shall be affixed to the bond in addition to the signature of the Attorney-in-Fact.

END OF SECTION

## 01 10 00 – SUMMARY

### Scope

Per the direction of the Tennessee Board of Regents, Hurst-Rosche, Inc. has prepared an architectural scope of work for the fabric replacement of the student recreation center at Pellissippi State Community College.

The scope of work, and initial cost summaries are broken down as follows;

Deconstruction will include the removal of the existing fabric over the top of the structure as well as the end walls and moveable end wall. All framing, doors, heating, lighting, exhaust fans, etcetera are to remain; and will be replaced only if necessary due to failure or deterioration. Throughout the deconstruction/ construction process, protect court surfaces. A covering over the wooden basketball court will be necessary to protect against rain, and water intrusion from the sides and run-off.

Construction will include providing and installing a new fabric covering which is equivalent or exceeds the performance of the existing fabric covering in its original condition. New framing, doors, heating, lighting, exhaust fans will be installed as deemed necessary during the deconstruction phase. New fabric side curtains, moveable end wall fabric, and divider curtains will also be installed.

The United States Access Board which governs The Americans with Disabilities Act (ADA) Standards, make it clear in 28 CFR 35.151 that alterations to the facility that are of the maintenance variety are not affected by ADA standards. Since this project is looked at through the lens of an alteration (because of it being a fabric replacement) it will not be affected.

### Alternates

#### 1. Overhead Glass Doors

The ten existing manually operated 12'x7' doors will be removed. There are five on each end wall. Cycling the doors is difficult and cumbersome due to the size

of the doors, and the age of the structure. Ten new electrically controlled overhead doors with transparent glass panels in the openings of the existing 12'x7' doors will be installed.

## 2. High-Volume, Low-Speed Fan

The three existing ceiling fans will be removed. They are spread evenly along the building's vaulted peak. These fans are too small and mounted too close to the ceiling to effectively move air throughout the building. This contributes to the condensation problem in this building. Two high-volume-low-speed (HVLS) 20-foot diameter fans will be installed.

END OF SECTION



## 01 23 00 – ALTERNATES

### PART 1 - GENERAL

#### 1.01 REQUIREMENTS

- A. Section includes identification of each Alternate by number, and describes the basic changes to be incorporated into the Work if a particular Alternate is made a part of the work by specific provisions in the Agreement between the Owner and the Contractor.
- B. Related sections are referenced in the definition of each Alternate.
- C. Coordination of related work and modifications to surrounding work as required to properly integrate each Alternate, and to provide the complete construction required by the Contract Documents, is the responsibility of the Contractor.

#### 1.02 DESCRIPTION OF ALTERNATES

##### 1. Overhead Glass Doors

The ten existing manually operated 12'x7' doors will be removed. There are five on each end wall. Cycling the doors is difficult and cumbersome due to the size of the doors, and the age of the structure.

Provide and install ten new overhead doors with translucent or tinted glass to prevent heat gain and glare in facility. The new overhead doors to fit in the existing 12'x7' opening left by the removal of the existing manually operated doors. The new overhead doors to be operated by an electrically controlled motor provided and installed with the new doors. Install as shown within the drawings. Ensure that new doors are mounted in existing structure properly and meet structural requirements.

##### 2. High-Volume, Low-Speed Fans

The three existing ceiling fans will be removed. They are spread evenly along the building's vaulted peak. These fans are too small and are mounted too close to the ceiling to effectively move air throughout the building. This contributes to the condensation problem in this building.

Provide and install two new High-Volume, Low-Speed (HVLS) 20-foot diameter fans as shown within the drawings. Connection of the new fans to existing structure to be designed and sealed by a licensed structural engineer in the state of Tennessee. Licensed structural engineer to ensure existing structure is capable of supporting all loads associated with the installation of the new fan. Extend fan from ceiling utilizing eleven (11) foot extension and any necessary structural members per structural engineer.

### PART 2 – PRODUCTS (Not Used)

**01 23 00 – ALTERNATES**

PART 3 – EXECUTION (Not Used)

END OF SECTION

## 01 25 13 PRODUCT SUBSTITUTION PROCEDURES

### PART 1 - GENERAL

#### 1.01 SUBSTITUTIONS:

- A. Contractor assumes all risks associated with premature ordering and installation of substitute products.
- B. The specifically named manufacturers, products, and systems, and descriptive characteristics used in the Contract Documents normally serve only to establish a level of quality and a performance standard. Unless a specific restriction is placed upon an item in the specifications, Contractor may submit proposals for substitutions. The Owner reserves the right to disallow substitutions.
- C. Delays caused by tardiness of Contractor in preparing and forwarding submittals do not constitute an acceptable basis for consideration of substitute products. Delays due to factors which were in effect prior to project bidding do not constitute an acceptable basis for consideration of substitute products.
- D. Decisions heretofore made concerning the equivalence or equality of materials, supplies and equipment furnished for or incorporated in other projects, completed or under construction for the Owner shall not be considered as precedents or criteria and shall have no bearing or influence on the question of equivalent, equal or comparable materials, supplies and equipment for the Work.

#### 1.02 SUBSTITUTION REQUEST FORM:

- A. Requests for substitutions shall be submitted to Designer on the form exhibited as Section 01 25 33, or in a similar format which provides the same or more information.
- B. When making requests for substitutions, Contractor assumes the following responsibilities:
  - 1. To have investigated the proposed substitute product and determined it is equal or superior in all respects to that specified;
  - 2. To provide the same warranty for substitute that Contractor would for that specified;
  - 3. To provide complete cost data, and waive all claims for additional costs related to substitution which subsequently become apparent; and
  - 4. To coordinate installation of the accepted substitute, making such changes as may be required for Work to be complete in all respects.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION



**01 25 33 – PRODUCT SUBSTITUTION REQUEST FORM**

To:	Project:
Attention:	SBC Number:
Specified Item Name and Manufacturer:	Proposed Substitute Item Name and Manufacturer:

1. The following are attached (mark all that apply):
  - Complete Description       Catalog
  - Laboratory Tests       Specifications Data
2. This substitution will have the following effects on dimensions, gauges, weights, etc.:
3. This substitution will have the following effects on wiring, piping, ductwork, etc.:
4. This substitution will have the following effects on other trades:
5. This substitution will have the following effect on construction schedules:
6. The proposed substitute(s) differs from the specified product(s) in quality and performance as follows:
7. Manufacturer guarantees for the substitute(s) and the specified product(s) are (check one):
  - The Same       Different (if different, explain below)

**01 25 33 – PRODUCT SUBSTITUTION REQUEST FORM**

8. Information on the availability of maintenance services and replacement materials for proposed substitute(s) is provided on an attached sheet.

- Attached                       Not Applicable

9. Names, addresses, and phone numbers of fabricators and suppliers for proposed substitute(s) are provided on an attached sheet.

- Attached                       Not Applicable

10. If the proposed substitution is accepted, it will result in:

- No Cost Impact  
 A Cost Decrease of \$\_\_\_\_  
 A Cost Increase of \$\_\_\_\_ As Shown on Attached Itemization

11. License fees or royalties are pending on the proposed substitute.

- No                                       Yes (if yes, explain below)

12. The undersigned shall pay for additional studies, investigations, submittals, redesign, and analysis by the Designer necessitated by this substitution request.

Substitutions must be requested in accordance with applicable Contract requirements. After bidding, substitutions are to be submitted only by Contractor. Substitute products should not be ordered or installed without written acceptance.
--

Submitted By:

Signature:	Date:
Printed Name:	Firm Name:

13. Designer Review and Comments:

- Accepted                               Rejected  
 Accepted as Noted                       Rejected (received too late)  
 Rejected (submitted incomplete)

Signature:	Date:
Printed Name:	Firm Name:

14. Owner Review:

Signature:	Date:
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END OF SECTION

## **01 26 00 – CONTRACT MODIFICATION PROCEDURES**

### **PART 1 - GENERAL**

#### **1.01 SUPPORTING DOCUMENTATION FOR PROPOSALS OR CLAIMS**

- A. Propose related changes to Work, Contract Sum, and Contract Time, in writing together. Propose unrelated changes separately. Attach and reference pertinent documents related to the change.
- B. For a change in the Work, specifically describe proposed change, or briefly describe the proposed change with specific reference to a completely descriptive attachment, such as a request for proposal from the Designer.
- C. For a change in Contract Sum, state briefly the reason for change, state the amount, and provide itemization of values on the following forms or similar forms providing the same information:
  1. Section 01 26 54 Form for Price Summary, listing the itemizations of Work by subcontractors and the Contractor that together apply to an entire related change in work.
  2. Section 01 26 55 Form for Price of Work, detailing the quantities, units, costs, and extensions for materials, equipment, and labor, subtotaled, plus overhead, and profit related to a specific proposed change in the Work.
  3. Section 01 26 56 Form for Price of Time, if applicable, deriving an average cost per day.
- D. For a change in Contract Time:
  1. Fully describe the extent of and reasons for the change and effect of the change on the construction schedule, and attach a revised construction schedule. Take into account weekends, holidays, and the specified standard baseline for weather delays during the period of the requested extension.
  2. For a change based on weather-related delay refer to Section 01 26 20.

#### **1.02 SIGNATURES FOR CHANGE ORDER**

Form shall be similar in format and content to Section 01 26 40 and signed by authorized representatives of the Owner, Designer, and Contractor according to the following procedure:

1. Designer prepares and submits supporting documents to Owner.
2. Owner produces and signs three (3) counterparts of form. Owner scans and transmits an informational copy to its construction representative, Designer, and Contractor.
3. Owner's construction representative brings owner's three original, signed counterparts to next progress meeting, unless urgency and opportunity make for a more timely execution.
4. Designer and Contractor both sign all three (3) counterparts at progress meeting. Each retains a counterpart, and the Owner's construction representative retains the third for the Owner.

**PART 2 – PRODUCTS (Not Used)**

**PART 3 – EXECUTION (Not Used)**

**END OF SECTION**





## 01 26 20 – WEATHER DELAYS

### PART 1 - GENERAL

#### 1.01 EXTENSION OF CONTRACT TIME

If a Claim is made for an extension of time based upon weather delays in accordance with the General Conditions an extension may be granted only for the number of weather delay days in excess of the number of days listed for the applicable month on the standard baseline.

#### 1.02 STANDARD BASELINE FOR ADVERSE WEATHER

- A. The standard baseline is defined as the number of calendar days for each month during which construction activity exposed to weather conditions is expected to be prevented and suspended by cause of adverse weather. Suspension of construction activity for the number of days each month as listed in the standard baseline is included in the Work and is not eligible for extension of Contract Time.
- B. The Owner has established a standard baseline for the State of Tennessee as follows:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12	11	8	7	7	6	7	5	4	5	6	11

#### 1.03 ADVERSE WEATHER AND WEATHER DELAY DAYS

- A. Adverse weather is defined as the occurrence of one or more of the following conditions within a 24 hour day that prevents construction activity exposed to weather conditions or access to the site:
1. Precipitation (rain, snow, or ice) in excess of one-tenth inch liquid measure.
  2. Temperatures that do not rise above the minimum required for the day's construction activity, if such temperature requirement is specified or accepted as standard industry practice.
  3. Sustained wind speed in excess of the maximum for the day's construction activity, if such sustained wind speed maximum is specified or accepted as standard industry practice.
  4. Dry out days under the following conditions:
    - a. more precipitation days occur than listed in the standard baseline;
    - b. there is a hindrance to site access or sitework and Contractor has taken all reasonable accommodations to avoid such hindrance; and,
    - c. no more than one dry out day is allocated for each additional day of precipitation more than the standard baseline that total one inch or more, liquid measure, unless specifically recommended by the Designer.
- B. A weather delay day may be counted if adverse weather prevents work on the project for 50% or more of the contractor's scheduled work day and critical path construction activities were included in the day's schedule, including a weekend day or holiday if Contractor has scheduled construction activities that day.

## 01 26 20 – WEATHER DELAYS

### 1.04 DOCUMENTATION AND SUBMITTALS

#### A. Weather Delay Report:

1. Use a copy of Section 01 26 25 as a weather delay report, indicating for each calendar month the days on which construction activity affecting the critical path of the Work was prevented by weather conditions.
2. In the column for the cause, indicate measurement of precipitation, temperature, wind, or other influencing factors.
3. Describe the construction activity that was scheduled, on the critical path, and delayed.
4. At the end of the month, add up the number of days delay, subtract the baseline number given in this Section, and show the resulting claimable days in excess of baseline.
5. Submit a copy of the completed report with the next application for payment. Reports submitted with applications for payment do not constitute a claim or preliminary claim for extension of time.

#### B. Claim for a time extension based on weather delay(s):

1. Submit a copy of all reports completed since the last month for which a time extension was previously claimed, or the commencement of Work if no previous claim, through the last month for which delay is being claimed. Claims for time extension based upon weather delays are unjustified if a submitted report does not corroborate the claim or if no report was submitted when it was required with an application for payment.
2. Submit daily jobsite work logs showing which and to what extent critical path construction activities have been affected by weather on a monthly basis.
3. Submit actual weather data to support claim for time extension obtained from nearest NOAA weather station or other independently verified source approved by Designer at beginning of project.
4. Organize claim documentation to facilitate evaluation on a basis of calendar month periods and the standard baseline.
5. Submit in accordance with the requirements of the Contract Documents.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

**01 26 25 – WEATHER DELAY REPORT**

SBC Project Number and Project Name:		Month and Year Reported Below:
Date	Weather condition causing delay	Work scheduled on critical path for this day that was delayed.
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
	Total number of days this month with delay due to weather	
	Baseline number from Section 01 26 20	
	Total – Baseline = claimable days	

END OF SECTION



**01 26 40 – FORM FOR AMENDMENT, CHANGE ORDER, OR DIRECTIVE**

Amendment PROJECT:  
 Change Order Project Number:  
 Construction Change Directive Modification Number:  
 Original Contract Date: Date This Change Initiated:

The following changes in the Contract are hereby directed:

Item	Reference	Work	Contract Sum	Contract Time
------	-----------	------	-----------------	------------------

---

The original Contract Sum ..... \$  
 Net Change previously authorized..... \$  
 The Contract Sum prior to this Modification..... \$  
 This modification ( *increases / does not change / decreases* ) the Contract Sum... \$  
 The new Contract Sum, including this modification ..... \$  
 This Modification ( *increases / does not change / decreases* ) the Contract Time..  
 The new Contract Time, including this Modification.....  
 The last day of the Contract Time, including this Modification.....

---

<b>CONTRACTOR</b> Signed <hr/> Name & Date <hr/> For	<b>DESIGNER</b> Signed <hr/> Name & Date <hr/> For	<b>OWNER</b> Signed <hr/> Name & Date <hr/> For
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Changes over 10% cumulatively or exceeding \$500,000.00, STATE ARCHITECT:

Signed	Name	Date
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## 01 29 54 – RETAINAGE ESCROW INITIATION

### PART 1 - GENERAL

#### 1.01 BASIC REQUIREMENTS

- A. Reference Tennessee Code Annotated (TCA) § 66-34-104.
- B. In accordance with State law retainage shall be deposited into an interest-bearing escrow account if the original Contract Sum is \$500,000 or greater.
- C. Failure to have the escrow account operational by the time of the Contractor's second application for payment will result in delay of payment or inability of the Owner to make payment. Any such delay or inability to pay will not be grounds for relief under the prompt payment statutes.

#### 1.01 BANKING INSTITUTION REQUIREMENTS

The banking institution handling the retainage escrow account must be in an appropriate custodial care agreement with the State Treasurer. If not already in such an agreement, a banking institution can request such an agreement from the State Treasurer, subject to meeting eligibility requirements of TCA §12-4-108(c).

#### 1.03 PROCESS

- A. Shortly after award of contract, the Tennessee Department of Finance and Administration (F&A) will send the Contractor information for starting the account. This information typically includes the following:
  - 1. Procedural guide
  - 2. Forms including the basic application provided herein as Form A.
  - 3. List of banks that currently have agreements with the State to host retainage escrow accounts.
- B. The instructions from F&A will include a name and phone number to call for help if the Contractor needs help completing Form A or if the Contractor plans to use a lending institution that does not have a current agreement with the State for hosting retainage escrow.
- C. Immediately upon award of a contract with a Contract Sum of \$500,000 or greater, complete the Form A shown in this section, arrange for the completed Form A to be executed by the escrow bank, and instruct the bank to submit the original wet-signature Form A to the following address.

Retainage Escrow Coordinator  
Tennessee Department of Finance and Administration  
Office of Business and Finance  
Suite 2000 William R. Snodgrass Tennessee Tower  
312 Rosa L. Parks Avenue  
Nashville TN 37243-0294

01 29 54 – RETAINAGE ESCROW INITIATION

FORM A
APPLICATION FOR THE SUBSTITUTION OF SECURITIES FOR ALL AMOUNTS
RETAINED ON STATE BUILDING COMMISSION CONSTRUCTION CONTRACTS

Date: \_\_\_\_\_

RE: Contract Number: \_\_\_\_\_

Project No.: \_\_\_\_\_

Location: \_\_\_\_\_

Dear State Building Commission:

Pursuant to the provisions of Tennessee Code Annotated, Sections 12-4-108,

Contractor's name and
address as appearing
on construction
Contract:

[Empty rectangular box for contractor information]

hereby requests that whenever payment for which certain amounts are retained by the State Building Commission as determined by the subject construction contract, the amount so retained be substituted for approved securities, as designated by the Tennessee State Treasurer.

The undersigned Contractor hereby appoints \_\_\_\_\_
(Name of Banking Institution)

located at \_\_\_\_\_ to be its
(Complete Address of Banking Institution)

agent and attorney-in-fact to receive all amounts retained by the State Building Commission under the provisions of the subject construction Contract and to purchase Retainage Securities of the following type:

\_\_\_\_\_  
(Description & Account Number)

The appointed Banking Institution, as indicated by the acceptance signature shown below, agrees to enter or has already entered into a Trust Agreement with the Tennessee State Treasurer to act as custodian and servicing agent of Retainage Securities and to perform all assigned duties and responsibilities with respect thereto as set forth in the Trust Agreement, which is herein incorporated by reference.

Very truly yours,

\_\_\_\_\_  
(Signature of Authorized Representative of Contractor)

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

ACCEPTED:

\_\_\_\_\_  
(Signature of Authorized Officer of Banking Institution)

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

CONTACT PERSON (BANK) \_\_\_\_\_ PLEASE PRINT

PHONE NUMBER \_\_\_\_\_

END OF SECTION



## 01 29 73 – SCHEDULE OF VALUES

### PART 1 - GENERAL

#### 1.01 FORM AND APPROVAL

- A. The form for the Schedule of Values shall be AIA Document G703 Continuation Sheet.
- B. If objected to by the Designer or the Owner revise and resubmit the Schedule of Values to the Designer's and Owner's satisfaction prior to submitting an Application for Payment.

#### 1.02 LEVEL OF DETAIL

- A. Provide a breakdown of the Contract Sum in sufficient detail to facilitate ongoing evaluation of Applications for Payment and progress measurement and reports.
- B. Round off line items to the nearest whole dollar with the total equal to the Contract Sum.

#### 1.03 ALLOCATION OF VALUES

- A. Phases:
  - 1. If Phases are stipulated with distinct commencement, duration, or completion requirements, divide the allocation to correspond to the Phases.
  - 2. Within each Phase subdivide the allocations as described below and subtotal.
- B. Sitework:

Provide line items for sitework including categories for site utilities, roads and parking, and appurtenances according to general type and physical separation.
- C. Each involved building or major structure:
  - 1. Categorize items by major trades or units of work corresponding to the divisions and sections of the specifications.
  - 2. Further subdivide as desired but maintain a distinct and identifiable correspondence to this allocation.
- D. If allowances are stipulated in the Work, provide a line item in the Schedule of Values for each allowance, including quantity allowances associated with Unit Prices. If the project has phases associate the allowance with the relevant phase.
- E. If the Contract is a CM/GC contract based on a Guaranteed Maximum Price (GMP) with estimated trades identified as a part of the GMP, provide a distinct line item for each estimated trade.
- F. Prior to receipt of written approval of a Change Order, do not show in any respect a Change Order intended to modify the Contract sum, regardless of the Change Order's status prior to being fully execute. After a Change Order which modifies the Contract Sum is approved and fully executed by the Owner show the Change Order as follows.
  - 1. Provide a single line item for each fully executed Change Order with identification by Change Order number.
  - 2. Maintain these line items through the balance of the project.
- G. For the final statement of accounting incorporate Change Orders that modify the Contract Sum into the appropriate allocations.

END OF SECTION



**01 29 76 – PROGRESS PAYMENT PROCEDURES**

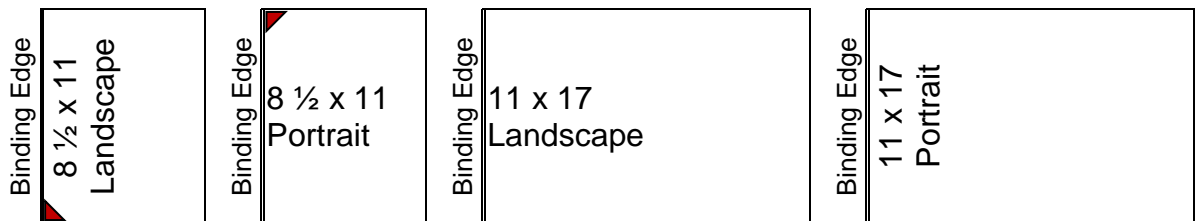
**PART 1 – GENERAL**

**1.01 SUBMITTAL:**

A. In each Application for Payment provide the document indicated in the following table according to its context.

Counterpart or Copy	Progress Payment	Reducing Retainage Upon Subst. Completion	Final Payment	Document	§ 1.03 Subsection
counterpart	YES	YES	YES	G702 Application	A
copy	YES	YES	YES	G703 Continuation	B
copy	no	no	YES	Final Accounting	C
copy	YES	YES	YES	Contingency & Reserve Logs (if CM/GC)	D
copy	if any	if any	no	Off-Site Stored Materials documents	E
counterpart	no	no	YES	Affidavit of Payment	F
counterpart	no	YES	YES	Consent of Surety with Power of Attorney	G
copy	no	no	YES	Insurance Certificate	H
copy	no	no	YES	Statement of Continuing Insurability	I
copy	no	if any	if any	U&O Permit	J
copy	no	YES	YES	Data Binder Receipt(s)	K
copy	no	no	YES	Roof Warranty or Warranties	L
copy	no	no	YES	Report of Subcontractors and Suppliers	M
copy	YES	if any	no	Visitor Log	N
copy	YES	if any	no	Weather Delay Report	O

B. Provide application documents assembled in order listed above on 8½” x 11” pages, except 11” x 17” pages can be used for Progress Schedules and Submittal Logs if folded to fit an 8½” x 11” size. Orient all pages as shown below. Provide application sets bound with a single clip (no staple) affixed to the upper left of the G702 first page (according to its orientation ▽).



C. Counterpart documents shall be original instruments with wet signatures and embossed or wet-stamped seals, in each set of application documents.

## 01 29 76 – PROGRESS PAYMENT PROCEDURES

- D. Provide a draft submission, including attachments, as a PDF attached to an email, to Designer and to the Owner's construction representative three days prior to actual submittal.
- E. Provide actual submission of five sets of the application documents to the Designer at progress meeting, substantial completion inspection meeting, or final inspection meeting. If submitted outside of these meetings, provide conveyance of application to Designer, from Designer to Owner's construction representative, and from Owner's construction representative to Owner's central office.

### 1.02 INCLUSIONS AND CALCULATIONS:

- A. Accurately represent all values with two decimal places, calculated to the penny.
- B. Stored Materials: Materials suitably stored on-site but not yet incorporated into the Work can be included; and, those suitably stored off-site can be included if documented in accordance with later provisions of this section.
- C. On CM/GC contracts, the total completed and stored to date for estimated trades can only be included once bids have been taken, subcontracts awarded, and the actual price reconciled to the Reserve Log.
- D. Calculation of retainage and amounts withheld:
  - 1. Credit for completed work and stored materials, and deductions for incomplete work, comprise the Total Completed and Stored to Date. The Total Completed and Stored to Date shall not include the value of punch list items that remain incomplete after Substantial Completion.
  - 2. Retainage is calculated as a percentage of Total Completed and Stored to Date: 5% prior to Substantial Completion; 2% after Substantial Completion; then, none at final payment. In the continuation sheets, showing retainage at individual line items is not required and is discouraged, as it promotes rounding errors. Retainage should only be shown at phase sub-totals, if phases exist, and when retainage rates vary between phases.
  - 3. Other amounts withheld (i.e., potential liquidated damages or in response to subcontractor claims of non-payment) can be added to the continuation sheet and deducted from the Total Completed and Stored to Date, or can be deducted from the resulting current payment due after retainage and prior payments are accounted.
- E. If a billing period would cross a State fiscal year (ending June 30, starting July 1), provide separate pay requests for the portion of work performed in each fiscal year.

### 1.03 FORMS, FORMAT, AND CONTENT:

- A. G702 Application: Use AIA Document G702 Application and Certificate for Payment
  - 1. For project identification, include the Owner's project number featured prominently, institution name, and work name, which is normally the project title shown in the Agreement.
  - 2. Provide a unique, sequential application number.
  - 3. Include the Contractor's address exactly as provided in the ACH Form.
  - 4. Show the county where the Work is located, normally where AIA captions "Contract for".

## 01 29 76 – PROGRESS PAYMENT PROCEDURES

- B. G703 Continuation: Use AIA Document G703 Continuation Sheet itemized with the line items and values of the schedule of values accepted by Designer, and values and percentages for each line item. If there are phases, include a sub-total for each phase as well as a grand total.
- C. Final Accounting: Allocate final Contract Sum as if Modifications had been fully incorporated in Contract Sum at award of Contract, and shall follow the same format as the schedule of values.
- D. GMP Contingency Log and Reserve Log, only if a CM/GC contract.
- E. Off-Site Stored Materials: If any, provide the following.
  - 1. Statement identifying where materials are stored, and assuring that materials are tagged to identify them for use in the project.
  - 2. Bill(s) of sale for materials claimed that list(s) all items.
  - 3. Certificate of insurance covering materials claimed, recognizing Owner's right to make claims.
- F. Affidavit of Payment of Debts and Claims: Provide counterpart using AIA Document G706, when requesting final payment for the Work or reduction of retainage to zero for any portion of the Work.
- G. Consent of Surety:
  - 1. If seeking reduction in retainage prior to final payment for the entire Work, or final payment on only a portion of the Work, provide counterpart using AIA Document G707A Consent of Surety to Reduction in Retainage, or a similarly formed letter.
  - 2. If seeking final payment, provide counterpart using AIA Document G707 Consent of Surety Company to Final Payment, or a similarly formed letter.
  - 3. If Contractor has listed exceptions in the affidavit of payment, Surety's consent shall acknowledge such exceptions.
  - 4. If Contract is not bonded, consent of surety is not required, and Owner will instead advertise a public notice of settlement, and wait 30 days for responses, before accepting the application.
  - 5. Provide counterpart of power of attorney with consent of surety.
- H. Insurance Certificate: If seeking final payment, provide certificate of insurance for products and completed operations as required by the General Conditions of the Contract for Construction.
- I. Statement of continuing insurability: If seeking final payment, a letter written to the effect required by the General Conditions of the Contract.
- J. Use & Occupancy Permit (some jurisdictions have a different name): Provide copy with first application following substantial completion.
- K. Data Binder Receipt:
  - 1. With first application following substantial completion, provide copy of document identifying to whom Contractor delivered the operating and maintenance data binders.
  - 2. With application for final payment, provide copy of document identifying to whom Contractor delivered project data binders

## **01 29 76 – PROGRESS PAYMENT PROCEDURES**

- L. Roof Warranty or Warranties, if any required, on the Owner's section 07 50 36 standard form.
- M. Report of Subcontractors and Suppliers, on the standard form.
- N. Visitor Log for the period covered by application. After substantial completion, provide log(s) for periods prior to substantial completion that have not been provided in a prior application.
- O. Weather Delay Report for all calendar months completed, up to the date of substantial completion, and not previously submitted.

### **1.04 CERTIFICATION**

- A. Designer, if in disagreement with the amounts claimed in an application, may either return application to Contractor for revision and resubmittal, or revise application by hand to indicate corrections Designer considers appropriate.
- B. Designer, finding an application complete and correct, will certify the application and return one of the sets to Contractor to indicate the action taken.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

## 01 31 19 – PROJECT MEETINGS

### PART 1 - GENERAL

#### 1.01 SCHEDULING AND ATTENDANCE

- A. The Designer, in cooperation with the Owner and the Contractor, will schedule and administer a pre-construction meeting, periodic progress meetings, and any required special meetings.
- B. Representatives of the Owner and the Designer will attend.
- C. Attending representatives of the Contractor, subcontractors, and suppliers shall be qualified and authorized to act on behalf of the entity each represents.
- D. The Contractor representative shall be authorized to sign Change Orders.

#### 1.02 PRE-CONSTRUCTION MEETING

- A. A pre-construction meeting will be scheduled upon the award of the contract prior to the issuance of the Notice to Proceed.
- B. The Contractor shall arrange for the following participants in the pre-construction meeting:
  - 1. The Contractor's superintendent and management representative having authority to sign change orders.
  - 2. Major subcontractors' representatives
  - 3. Major suppliers' representatives
  - 4. Others as desired

#### 1.03 PROGRESS MEETINGS

- A. Progress meetings are held to provide a regular and frequent opportunity for the following purposes:
  - 1. Conduct a general review of the progress of the Work aimed at identifying and mitigating impediments to timely completion.
  - 2. Provide an opportunity for the Contractor to submit Applications for Payment along with appropriate attachments and other submittals.
  - 3. Designer and Contractor sign Change Orders in accordance with § 01 26 00.
- B. Progress meetings will be scheduled and conducted at the project site when deemed advisable by the Designer until the Work is complete, typically twice monthly.
- C. The Contractor shall arrange for the following participants in progress meetings:
  - 1. The Contractor's superintendent and management representative having authority to sign change orders.
  - 2. Subcontractors' representatives, as befits the agenda
  - 3. Suppliers' representatives, as befits the agenda
  - 4. Others, as appropriate.
- D. Proceedings of these meetings will be recorded and the Contractor will be furnished copies for its use and for distribution to subcontractors, material suppliers and vendors.

## **01 31 19 – PROJECT MEETINGS**

### 1.04 SPECIAL MEETINGS

The Contractor and its subcontractors and suppliers shall attend special meetings as deemed necessary and requested by the Designer.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION



## **01 31 90 – ADMINISTRATIVE LOGS**

### **PART 1 - GENERAL**

#### **1.01 SUBMITTALS LOG**

- A. If any shop drawings, product data, or sample submittals are required by the Contract Documents, maintain a submittals log to record the status of submittals made to the Designer.
- B. Process:
  - 1. Submit three (3) copies with each Application for Payment.
  - 2. Clearly identify the Project.
  - 3. Record activities with respect to shop drawings, product data, samples, and such other submittals which are required by the Contract Documents.
  - 4. Indicate for each submittal made to date:
    - a. Title or name, and type of submittal.
    - b. Date submitted to the Designer.
    - c. Date returned by the Designer.
    - d. General nature of the Designer's response.

#### **1.02 VISITOR LOG**

- A. Maintain visitor log in the field office (or with the project superintendent when no field office is required) to record visits by all persons not a part of the Contractor's forces, materials suppliers, or subcontractors' forces, until substantial completion of the entire Work.
- B. Process:
  - 1. Submit a copy with each counterpart of each application for payment, covering the period since the last log(s) submitted.
  - 2. Clearly identify the Project.
  - 3. Use the form of specification Section 01 31 93, and indicate:
    - a. Visitor name and affiliation.
    - b. Date and time of visit.
    - c. Length of time on site.

**PART 2 – PRODUCTS (Not Used)**

**PART 3 – EXECUTION (Not Used)**

**END OF SECTION**







## 01 32 00 – CONSTRUCTION PROGRESS DOCUMENTATION

### PART 1 – GENERAL

#### 1.01 IDENTIFICATION

- A. Identify clearly the Project, SBC Number, and date of issuance or revision on each submitted schedule.

#### 1.02 CONSTRUCTION SCHEDULE FORMAT

- A. Use a bar chart or critical path schedule format or other method approved by the Designer. A critical path schedule is recommended to enable meeting requirements for documentation for time extension requests.
- B. Utilize a construction scheduling software for development and updates.
- C. Outline the orderly progress of the Work as planned from the Notice to Proceed through Substantial Completion on the contractually required date.
- D. Categorize the Work by major work area and distinct trade or team. If phases are specified also categorize by phase.
- E. Divide work activities into one month or less duration.
- F. Provide an identifiable relationship to the schedule of values.
- G. Identify projected monthly progress, points of 50% completion and Substantial Completion, and other major milestones.
- H. If included in the Work, commissioning and storm water pollution protection plan activities shall be major milestones.
- I. If planting that is seasonally sensitive is included in the Work, show such distinctly in a seasonally appropriate time.
- J. Transmit the schedule in PDF format when requested by the Owner or Designer.

#### 1.03 INITIAL CONSTRUCTION SCHEDULE

Submit within 21 days of award of the Contract and no later than the date of submission of the first Application for Payment.

#### 1.04 UPDATED CONSTRUCTION SCHEDULE

- A. Submit a copy attached to each counterpart of Applications for Payment.
- B. Format in a manner similar to the initial progress schedule and as follows:
  - 1. Indicate the initial construction schedule for the Work.
  - 2. Identify the actual progress through the period covered by the current Application for Payment.
  - 3. Indicate the planned progress through Substantial Completion including extensions of time made by Modification.
  - 4. If actual progress falls behind previous projections, indicate the recovery plan so that the Work will be completed on time.

#### 1.05 SUBMITTALS SCHEDULE

- A. Submit in writing with the initial construction schedule.
- B. The submittals schedule may be incorporated into the construction schedule if clearly identified.

## **01 32 00 – CONSTRUCTION PROGRESS DOCUMENTATION**

- C. Identify submittals to be made.
- D. Show date for submission and date by which Designer should respond, allowing sufficient time for review. Designer may require revision of the submittals schedule if times allotted for review are insufficient.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

## 01 41 15 – BASIC REGULATORY REQUIREMENTS

### PART 1 - GENERAL

#### 1.01 APPLICABLE CODES, RULES, STANDARDS, REGULATIONS, AND LAWS

- A. Comply with all applicable codes, standards, regulations and laws.
- B. The following is a list of major codes that may govern the project. It is not to be considered all-inclusive of codes and regulations that may apply and current revisions and editions must be confirmed.
  - 1. Currently adopted codes of the Tennessee Department of Commerce and Insurance, State Fire Marshal's Office. Refer to the Codes Enforcement section of the Office's web site for further information which may include, but is not limited to the following.
    - a. building codes
    - b. fuel gas codes
    - c. mechanical codes
    - d. plumbing codes
    - e. property maintenance codes
    - f. fire codes
    - g. energy conservation codes
    - h. existing building codes
    - i. fire protection and life safety codes
  - 2. Current rules of the Tennessee Department of Commerce and Insurance, Division of Fire Prevention. Refer to the Division's web site for further information which may include, but is not limited to the following.
    - a. electrical installation rules
    - b. equitable restroom rules
    - c. construction plans and specifications review rules
  - 3. Current rules of the Tennessee Department of Labor and Workforce Development, Board of Boiler Rules. Refer to the Board's web site for further information.
  - 4. Current rules of the Tennessee Department of Labor and Workforce Development, Elevator & Amusement Device Safety Board. Refer to the Board's web site for further information.
  - 5. The Tennessee Public Building Accessibility Act, Tennessee Code Annotated (TCA) § 68-120-204 with comments as follows. Reference the web site of the Tennessee Department of Commerce and Insurance, Division of Fire Protection.
    - a. ADA Title II, State and local government facilities must follow the requirements of the 2010 standards, including both the Title II regulations at 28 CFR 35.151 and the 2004 ADAAG at 36 CFR part 1191, appendices B and D. In the few places where requirements between the two differ, the requirements of 28 CFR 35.151 prevail. The compliance date is March 15,

## 01 41 15 – BASIC REGULATORY REQUIREMENTS

2012, for all newly constructed or altered State and local government facilities permitted after this date.

- b. ADA Title III, Public accommodations and commercial facilities must follow the requirements of the 2010 standards, including both the Title III regulations at 28 CFR part 36, subpart D: and the 2004 ADAAG at 36 CFR part 1191, appendices B and D. In the few places where requirements between the two differ, the requirements of 28 CFR part 36, subpart D prevail. The compliance date is March 15, 2012, for all newly constructed or altered facilities permitted after this date.
  - c. Reference:  
U.S. Department of Justice  
Civil Rights Division,  
Disability Rights Section-NYA  
950 Pennsylvania Ave, NW  
Washington, DC 20530  
(202) 514-4609
6. The Tennessee Water Quality Act of 1977, TCA § 69-3-101. For further information refer to the web site of the Tennessee Department of Environment and Conservation, Division of Water Resources.
  7. ASHRAE Standards:
    - a. 62.1-2013, Ventilation for Acceptable Indoor Air Quality
    - b. 90.1-2010, Energy Standard for Buildings Except Low-Rise Residential Buildings. A COMCHECK compliance certificate for envelope, interior lighting, exterior lighting, and mechanical must be submitted with the designers seal affixed to it.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION



## 01 60 00 – PRODUCT REQUIREMENTS

### PART 1 - GENERAL

#### 1.01 ENVIRONMENTAL, HAZARDOUS PRODUCTS, MATERIALS, OR WASTES

- A. Do not incorporate in the Work hazardous materials or products as currently defined in the Resource Conservation and Recovery Act of 1976 (RCRA), the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), or Environmental Protection Agency (EPA) regulations, rules, or requirements, as amended, and/or State and local regulations, rules, or requirements that are equivalent or more stringent than the Federal regulations, rules, or requirements unless the Contract Documents give no other option than to provide a material or product that contains a hazardous material, component, constituent, waste, or leachate. In studying the Contract Documents and carrying out the Work, report at once to the Designer the discovery of a product or material that contains or is suspected to contain hazardous materials, components, constituents, waste, or leachate.
- B. Do not incorporate in the Work a product or material that contains concentrations of a constituent, component, or material above the threshold levels which would require adherence to hazardous waste disposal regulations as currently defined, or could cause a release or threat of release of a hazardous substance at a level that would require a remedial response or removal action as currently defined by RCRA, CERCLA, or the EPA.
- C. Select materials and products meeting specified requirements that comply with EPA requirements as regards hazardous materials content. In making requests for substitutions, determine that materials and products proposed for substitution comply with RCRA, CERCLA, and EPA requirements, and supply chemical constituent information and/or Material Safety Data Sheets (MSDS) with the substitution request.

#### 1.02 TRANSPORTATION AND HANDLING

- A. Materials, products and equipment shall be properly containerized, packaged, boxed and protected to prevent damage during transportation and handling.
- B. More detailed requirements for transportation and handling are specified under the technical sections.

#### 1.03 STORAGE AND PROTECTION

- A. Provide suitable temporary weather tight storage facilities as may be required for materials that will be damaged by storage in the open.
- B. On-site storage space is limited to the site. Acquisition of any additional off-site space is the responsibility of the Contractor.
- C. Allocate the available storage areas and coordinate their use by trades. Maintain a current list showing all items and where they are stored.
- D. Store and protect materials delivered to the site from damage. Do not use damaged material in the work.

#### 1.04 INSTALLATION REQUIREMENTS

Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the respective manufacturers, unless otherwise specified.

## **01 60 00 – PRODUCT REQUIREMENTS**

### **1.05 IDENTIFYING MARKINGS**

Nameplates and other identifying markings shall not be affixed on exposed surfaces of manufactured items installed in finished spaces.

### **1.06 PRODUCT APPROVAL STANDARDS**

#### **A. Definitions:**

1. The term “product” shall include material, equipment, assembly methods, manufacturer, brand, trade name or other description.
2. References to approved equal, approved substitution, or similar terms mean that Designer approval is required.

#### **B. Proof of Compliance:** Where the specifications require conformance with Federal specification, ASTM designation, ANSI specification or other association standard, the Contractor shall, where requested or specified, submit supporting test data to substantiate compliance.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

## 01 77 70 – CLOSEOUT PROCEDURES

### PART 1 - GENERAL

#### 1.01 PRE-CLOSEOUT SUBMITTALS

- A. Submit required tabulations when Work reaches seventy-five percent completion; however, regardless of percent completion, submit not later than 30 days prior to the scheduled date on which Substantial Completion is required.
- B. Submit tabulations of the following.
  - 1. Equipment and systems for which the specifications require demonstrations or training, indicating relevant specification sections, scheduled time and place for demonstration and training sessions, and intended audience. Adjust schedule if instructed by Designer to do so.
  - 2. Equipment and systems for which operating and maintenance data are required in the Operating and Maintenance Data Binders and related documents are required in the Project Data Binders.
  - 3. Spare parts and extra materials required, indicating the relevant specification sections, and the appropriate party to whom the items are to be delivered.

#### 1.02 REQUEST FOR CLOSEOUT INSPECTION

- A. Substantial Completion: When Contractor considers Work substantially complete, Contractor shall submit the following to Designer.
  - 1. Written assertion that Work is Substantially Complete
  - 2. A list of items to be completed or corrected and dates scheduled for completion or correction of each item
  - 3. Certification that orientation and training for facility maintenance personnel is complete or written assertion that such orientation and training will be certified prior to inspection
  - 4. Written assertion that Operating & Maintenance Data Binders are complete and available or will be prior to inspection
  - 5. When a Use and Occupancy Permit applies, a copy of the final approval(s), or written assertion that they will be complete and available prior to inspection
  - 6. A draft of the application for payment corresponding to the Substantial Completion, with written assertion that an application for payment will be ready and submitted at the inspection
  - 7. When there is Commissioning, written assertion that Commissioning requirements have been completed or will be prior to inspection
  - 8. When there is a storm water permit, written statement of the status of final stabilization required under the Storm Water Pollution Prevention Plan (SWPPP) for the TDEC Construction General Permit (CGP) Notice of Termination (NOT).
- B. Final Inspection: When Contractor considers Work complete, Contractor shall submit the following to Designer.
  - 1. Certification that a qualified person authorized by Contractor has reviewed the Contract Documents and inspected the Work
  - 2. Written assertion that the Work is complete and in accordance with Contract Documents and ready for Final Inspection

## 01 77 70 – CLOSEOUT PROCEDURES

3. Written assertion that additional materials necessary to augment the Operating & Maintenance Data Binders with instructions for adding these to the Binders, or full replacement Binders, are complete and available or will be prior to inspection
  4. Written assertion that Project Data Binders and Construction Record Documents are complete and available or will be prior to inspection
  5. An application for final payment
- C. Upon receipt of an appropriate request for inspection, Designer will schedule an inspection meeting with Contractor, and Owner's representatives to determine the status of completion.

### 1.03 RESULTS OF CLOSEOUT INSPECTIONS

- A. Should the Designer determine that Work is not complete to the degree asserted by Contractor, Designer will promptly notify Contractor in writing stating the deficiencies. Contractor shall take immediate steps to remedy deficiencies and make a request for Re-Inspection.
- B. Substantial Completion: Designer will prepare a Certificate of Substantial Completion accompanied by a list of items to be completed or corrected, and will submit Certificate to Contractor and to Owner for signature with an accounting of Liquidated Damages due, when Designer verifies the following.
1. Work is Substantially Complete based on an inspection conducted pursuant to an appropriate request for Closeout inspection
  2. Orientation and training for facility maintenance personnel is complete
  3. Operating & Maintenance Data Binders are complete and have been delivered to the Owner
- C. Final Inspection: Designer will certify that the Work is Complete, and will initiate Final Adjustments, when Designer verifies the following.
1. Work is complete in accordance with Contract Documents based on an inspection conducted pursuant to an appropriate request for Closeout inspection
  2. Orientation and training for facility maintenance personnel is complete
  3. Additional materials necessary to augment the Operating & Maintenance Data Binders with instructions for adding these to the Binders, or full replacement Binders, are complete and have been delivered to the Owner
  4. Project Data Binders and Construction Record Documents are complete and have been delivered to the Designer.

### 1.04 RE-INSPECTION FEES:

If the Work fails a Closeout inspection, and a subsequent inspection is requested and conducted based on Contractor assertion of the same stage of completion, Owner will compensate Designer for performing such re-inspection as additional services, and deduct the amount of such compensation from the Contract Sum by appropriate modification.

### 1.05 FINAL ADJUSTMENTS

- A. When Designer has certified that the Work is complete, Designer will determine whether modification is needed to reflect appropriate adjustments to Contract Sum

## **01 77 70 – CLOSEOUT PROCEDURES**

which were not previously effected. If such modification is needed, Designer shall assist the Owner in its preparation and deliver it to Contractor, who in the case of a change order, shall sign and return it to Designer.

- B. When Designer has certified that the Work and needed modifications to the Contract are complete, and if necessary, Designer will instruct Contractor to submit a revised final application for payment.

### **1.06 ONE-YEAR CORRECTIVE INSPECTION**

- A. An inspection will be scheduled and conducted at project site prior to one year from date Substantial Completion was achieved, but as close to the end of that year as is reasonably possible.
- B. The inspection will be attended by at least one representative each of Owner, Designer, and Contractor.
- C. The inspection will confirm non-conforming items previously identified for correction by the Owner, and whether corrections have been completed or are still outstanding, and is intended to be an opportunity for Contractor to become aware of any outstanding corrections needed.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION



## 01 78 01 – CLOSEOUT SUBMITTALS

### PART 1 - GENERAL

#### 1.01 DATA BINDERS

- A. Provide two complete sets on paper in three ring binders and a complete set in PDF format. Identify project and type of data on face and saddle.
- B. Provide information required by Contract Documents, including:
  - 1. Cover sheet giving complete project title and number, Contractor's name, address, phone number, superintendent's name, and related information.
  - 2. Table of Contents identifying material in Binder, and identifying missing materials to be added later or certifying completeness of Binder.
- C. Operating & Maintenance Data Binders
  - 1. Provide Product Data. Include: manufacturer; model number; names, addresses, & telephone numbers of suppliers, installers, & servicers; related information for repair, renovation, or additions.
  - 2. Provide Operating and Maintenance Data, including: instructions and schedules for proper operation, maintenance, servicing, and lubrication with manufacturer's parts list, illustrations, assembly drawings, maintenance diagrams, and list of recommended lubricants and cleaning agents; as-installed control diagrams and coordination drawings with color coded piping and wiring diagrams; valve tag charts with numbers, locations, and functions; panel board circuit directories; and, list of materials and parts furnished for Owner. Review brochures and manufacturer's standard printed information for data pertaining to models other than those actually provided, and mark to clearly omit inapplicable information and identify units actually installed.
  - 3. If Commissioning applies, provide Commissioning functional performance test certifications and data. If separate binders of this information have not been submitted already, provide a third copy in a separate binder.
  - 4. If a SWPPP applies, provide a section into which the Designer can add the Storm Water Operation & Maintenance Plan.
- D. Project Data Binders
  - 1. On the form exhibited as Section 01 78 88, provide required information for general contractor and all subcontractors and major material suppliers.
  - 2. Provide a copy of the Certificate of Substantial Completion.
  - 3. Provide a copy of the State Fire Marshal's Certificate of Occupancy, and other Use and Occupancy Permits, Certificate(s) of Inspection, or letter(s) of acceptance from governing authorities as apply.
  - 4. Provide guarantees, warranties, bonds, certifications, maintenance agreements, service contracts, and related documents, including beginning date, duration, information about instances which might affect validity, and proper procedure in case of failure.
  - 5. If a SWPPP applies, provide the twice-weekly inspection reports and site audit reports.

## **01 78 01 – CLOSEOUT SUBMITTALS**

### **1.02 CONSTRUCTION RECORD DOCUMENTS**

Keep the record copy of Contract Documents required by the Conditions in good condition and in the course of the Work, legibly mark these to record actual conditions of Work, including: location, depth, and identification of new and existing underground items, utilities, valves, tap points, equipment, service access, test points, and related features; field changes in dimensions and detail; changes by addenda or Modification; and, description and details of features for maintenance, service, replacement, or expansion of the Work.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION



**01 78 25 – DATA BINDER RECEIPT**

**PART 1 - GENERAL**

**1.01 CONTRACTOR PREPARATION AND USE OF THIS FORM**

A. Use this form or a reasonable facsimile to verify delivery of Data Binders. Fill in the identifying information following this paragraph, then use the prepared form as a receipt, for signature by the person to whom Data Binders are delivered. Provide a copy of the receipt with the Application for Payment.

1. For the Application for Payment commensurate with Substantial Completion, provide a copy indicating delivery of Operating and Maintenance Data Binders.
2. For the Application for Payment commensurate with Final Completion, provide a copy indicating delivery of Project Data Binders.

B. Identifying Information:

1. For the Work:

Project Name: \_\_\_\_\_

Institution: \_\_\_\_\_

Location: \_\_\_\_\_

SBC No.: \_\_\_\_\_

2. For the Data Binder(s), mark only one of the boxes below:

	Only <b>Operating &amp; Maintenance Data Binder</b> (due at substantial completion inspection)
	Only <b>Project Data Binder</b> (due at final inspection)
	<b>Both Data Binders</b>

**1.02 RECIPIENT SIGNATURE**

A. By signature below, recipient acknowledges receipt of the Data Binder identified above, but does not certify the completeness or correctness of the Data Binder.

Recipient Signature:

Recipient's name and title or  
affiliation with Owner or Designer


PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION



**01 78 88 – REPORT OF SUBCONTRACTORS AND SUPPLIERS**

**PART 1 - GENERAL**

**1.01 REQUIREMENTS**

Submit required reports of subcontractors and suppliers on forms similar to the example herein or on forms with equivalent content and detail.

**1.02 EXAMPLE REPORT**

REPORT OF SUBCONTRACTORS AND SUPPLIERS			
Project:		SBC No.	Report Date:
General Contractor Name, Address, Phone, and Principal Contact:			General Contractor Diversity-Owned? If "Yes", provide classification and certifying agency. ___ Yes ___ No
Work of Subcontractor or Major Material Supplied and Dollar Value	Firm Name and Address	Principal Contact and Phone Number	Diversity-Owned Business? If "Yes", provide classification and certifying agency. ___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No
			___ Yes ___ No

Continue report as required on additional pages. Page \_\_\_ of \_\_\_.

**END OF SECTION**



## **01 79 21 – DEMONSTRATION AND TRAINING**

### **PART 1 – GENERAL**

#### **1.01 DEMONSTRATION AND TRAINING**

- A. Coordinate a schedule of demonstration and training with Designer and Owner's personnel for all installed equipment and systems.
- B. Conduct demonstration and instruction as soon as practicable upon installations, and prior to Substantial Completion inspection. Substantial Completion shall not be certified, nor shall Owner be required to assume responsibility for operating, maintaining, or insuring system, prior to complete demonstration and instruction.
- C. If conditions (such as season of year) do not allow for a complete demonstration or training of equipment and systems operation during one meeting session prior to Substantial Completion; then coordinate a schedule that shall provide a sufficient number of sessions within the warranty period.
- D. Demonstrate operation of installed equipment and systems to Designer and to Owner's representative. All dependent systems must be demonstrated as being operationally coordinated, e.g. energy management controls coordinated with mechanical equipment.
- E. Demonstrations shall be complete and detailed; referencing manufacturer's printed O&M instructions and evidencing all required design specifications.
- F. All training shall be specific to the actual installed equipment and systems, and be performed by persons approved by equipment manufacturer(s) and/or approved by the Designer to conduct such training.
- G. Instruct Owner's personnel with overall equipment and systems assembly and function; using assembly drawings and diagrams which are specific to the actual installed equipment and systems.
- H. Instruct Owner's personnel in operation, adjustment, and maintenance of equipment and systems; using the manufacturer's printed operating and maintenance data that is specific to the installed equipment and systems as the basis of instruction.
- I. Verify that Owner's personnel have received all spare materials and parts required to be furnished, and provide instruction in replacement procedures.
- J. Make lists of persons witnessing equipment and systems demonstration, and persons receiving operating instruction, using a format similar to the form included in section 01 79 25 with project, subject, trainer, session information, and attendees identified. Include copy of lists in the Operating and Maintenance Data Binders.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION



**01 79 25 – DEMONSTRATION AND TRAINING VERIFICATION**

**PART 1 - GENERAL**

**1.01 INSTRUCTIONS**

- A. Use a copy of this page as a planning form for demonstrations and training. Fill in the basic identifying information below:

SBC Project Number: _____ Institution/Location: _____ Project Name: _____	Required date of Substantial
Owner's Facility Coordinator: _____ Phone: _____ Owner's Maintenance Contact: _____ Phone: _____ Contractor Contact: _____ Phone: _____	

- B. If a list of required demonstrations and training has been specified in Division 1, use that list as a starting point, review the project manual for other specifications that require training of the Owner's operators, and complete the list below. Check the box on left if Demonstration and Training is required on the standard listed subjects; add subjects as identified by review of the specifications and check the box to the left of each; and, schedule and indicate a target date for each. If the number of training subjects exceeds the available space provided here, replace or continue the list on a similarly formatted separate page. Submit the list with the initial Progress Schedule, and update as necessary during the Work to ensure that advance notice of the demonstration and training schedule is acceptable to the Designer.

Spec Reference	Subject	Target Date	Actual Date
	Accessibility		
	Boiler		
	Chiller		
	Controls		
	Data Transmission		
	Electrical		
	Elevator / Conveying		
	Fire Alarm		
	Irrigation		
	Mechanical		
	Plumbing		
	Telecommunications		

**01 79 25 – DEMONSTRATION AND TRAINING VERIFICATION**

**1.02 TRAINING VERIFICATION REPORT**

For each session conducted, use this page as a training verification report. Fill in the information below prior to the session. "End Time" may be filled in after.

SBC Project  
Number: \_\_\_\_\_

Institution/Location: \_\_\_\_\_

Project Name: \_\_\_\_\_

Subject Equipment / System:	
Spec Reference	

Demonstration and Training (by whom, where, when)	Trainer Name:	Company:		Phone:
	Place:	Date:	Start Time:	End Time:

**A. Minimum Agenda Requirements:**

System Walk-through  
  Operation  
  Trouble-shooting  
  Maintenance  
  Safety

**B. Attendance:** Each person receiving the demonstration and training shall sign in below, or on a similarly formatted continuation page:

Initials	Legibly print your name	Unit and title or function

END OF SECTION



## SECTION 02 41 19 - SELECTIVE STRUCTURE DEMOLITION

### PART 1 GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Demolishing designated construction.
  - 2. Cutting and alterations for completion of the Work.
  - 3. Removing designated items for reuse and Owner's retention.
  - 4. Protecting items designated to remain.
  - 5. Removing demolished materials.

#### 1.2 SUBMITTALS

- A. Section 01 33 23 - Shop Drawings, Product Data and Samples: Requirements for submittals.
- B. Demolition Schedule: Indicate overall schedule and interruptions required for utility and building services.
- C. Shop Drawings:
  - 1. Indicate demolition and removal sequence.
  - 2. Indicate location of items designated for reuse Owner's retention.
  - 3. Indicate location and construction of temporary work.

#### 1.3 CLOSEOUT SUBMITTALS

- A. Section 01 78 23 - Operations and Maintenance Data: Requirements for submittals.
- B. Project Record Documents: Accurately record actual locations of capped utilities, concealed utilities discovered during demolition, subsurface obstructions, and concealed spaces below existing wood sheathing.
- C. Operation and Maintenance Data: Submit description of system, inspection data, and parts lists.

#### 1.4 QUALITY ASSURANCE

- A. Conform to applicable code for demolition work, dust control, products requiring electrical disconnection and re-connection.
- B. Conform to applicable code for procedures when hazardous or contaminated materials are discovered.
- C. Contractor working on this project must be lead paint certified.
- D. Obtain required permits from authorities having jurisdiction.

## 1.5 PRE-INSTALLATION MEETINGS

- A. Convene minimum one week prior to commencing work of this section.

## 1.6 SEQUENCING

- A. Owner will conduct salvage operations before demolition begins to remove materials Owner chooses to retain.

## 1.7 SCHEDULING

- A. Schedule Work to coincide with new construction.
- B. Cooperate with Owner in scheduling noisy operations and waste removal that may impact Owners operation and in adjoining spaces.
- C. Coordinate utility and building service interruptions with Owner.
  - 1. Do not disable or disrupt building fire or life safety systems without three days prior written notice to Owner.
  - 2. Schedule tie-ins to existing systems to minimize disruption.
  - 3. Coordinate Work to ensure fire sprinklers, fire alarms, smoke detectors, emergency lighting, exit signs and other life safety systems remain in full operation in occupied areas.

## 1.8 PROJECT CONDITIONS

- A. Conduct demolition to minimize interference with adjacent and occupied building areas.
- B. Cease operations immediately if 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. Notify affected utility companies before starting work and comply with their requirements.
- B. Mark location and termination of utilities.
- C. Erect, and maintain temporary barriers and security devices, including warning signs and lights, and similar measures, for protection of the public, Owner, and existing improvements indicated to remain.
- D. Erect and maintain weatherproof closures for exterior openings.

- E. Erect and maintain temporary partitions to prevent spread of dust, odors, and noise to permit continued Owner occupancy.
- F. Prevent movement of structure; provide temporary bracing and shoring required to ensure safety of existing structure.
- G. Provide appropriate temporary signage including signage for exit or building egress.
- H. Do not close or obstruct building egress path.
- I. Do not disable or disrupt building fire or life safety systems without 3 days prior written notice to Owner.

### 3.2 SALVAGE REQUIREMENTS

- A. Coordinate with Owner to identify building components and equipment required to be removed and delivered to Owner.
- B. Tag components and equipment Owner designates for salvage.
- C. Protect designated salvage items from demolition operations until items can be removed.
- D. Carefully remove building components and equipment indicated to be salvaged.
- E. Disassemble as required to permit removal from building.
- F. Package small and loose parts to avoid loss.
- G. Mark equipment and packaged parts to permit identification and consolidation of components of each salvaged item.
- H. Prepare assembly instructions consistent with disassembled parts. Package assembly instructions in protective envelope and securely attach to each disassembled salvaged item.
- I. Deliver salvaged items to Owner. Obtain signed receipt from Owner.

### 3.3 DEMOLITION

- A. Conduct demolition to minimize interference with adjacent and occupied building areas.
- B. Maintain protected egress from and access to adjacent existing buildings at all times.
- C. Do not close or obstruct roadways and sidewalks without permits.
- D. Cease operations immediately when structure appears to be in danger and notify Architect/Engineer.
- E. Disconnect and remove designated utilities within demolition areas.

- F. Cap and identify abandoned utilities at termination points when utility is not completely removed. Annotate Record Drawings indicating location and type of service for capped utilities remaining after demolition.
- G. Demolish in orderly and careful manner. Protect existing improvements, supporting structural members and all material and equipment to remain.
- H. Carefully remove building components indicated to be reused.
  - 1. Disassemble components as required to permit removal.
  - 2. Package small and loose parts to avoid loss.
  - 3. Mark components and packaged parts to permit reinstallation.
  - 4. Store components, protected from construction operations, until reinstalled.
- I. Remove demolished materials from site except where specifically noted otherwise. Do not burn or bury materials on site.
- J. Remove materials as Work progresses. Upon completion of Work, leave areas in clean condition.
- K. Remove temporary Work.

END OF SECTION

## SECTION 05 12 00

### STRUCTURAL STEEL FRAMING

#### PART 1 GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Structural shapes.
2. Channels and angles.
3. Hollow structural sections.
4. Structural pipe.
5. Structural plates and bars.
6. Bolts, connectors, and anchors.
7. Grout.

###### B. Related Requirements:

1. Section 05 50 00 - Metal Fabrications: Steel fabrications affecting structural steel work.

##### 1.2 REFERENCE STANDARDS

###### A. American Institute of Steel Construction:

1. AISC 360 - Specification for Structural Steel Buildings.
2. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges.
3. AISC 341 - Seismic Provisions for Structural Steel Buildings.
4. AISC 358 - Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications.

###### B. ASTM International:

1. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
2. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
3. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.
4. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
5. ASTM A193/A193M - Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service.
6. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
7. ASTM A276 - Standard Specification for Stainless Steel Bars and Shapes
8. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
9. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.

10. ASTM A354 - Standard Specification for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners.
11. ASTM A380-Standard Specification for Cleaning, Descaling and Passivation of Stainless Steel Parts
12. ASTM A449 - Standard Specification for Quenched and Tempered Steel Bolts and Studs.
13. ASTM A484/A484M- General Requirements for Stainless Steel Bars, Billets, and Forgings
14. ASTM A490 - Standard Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength.
15. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
16. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
17. ASTM A514/A514M - Standard Specification for High-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding.
18. ASTM A529/A529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality.
19. ASTM A554 - Standard Specification for Welded Stainless Steel Mechanical Tubing.
20. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts.
21. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
22. ASTM A588/A588M - Standard Specification for High-Strength Low-Alloy Structural Steel with 50 ksi (345 MPa) Minimum Yield Point to 4-in. (100-mm) Thick.
23. ASTM A618/A618M - Standard Specification for Hot-Formed Welded and Seamless High-Strength Low-Alloy Structural Tubing.
24. ASTM A786/A786M - Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates.
25. ASTM A 793-Standard specification for rolled floor plate, stainless steel
26. ASTM A847/A847M - Standard Specification for Cold-Formed Welded and Seamless High Strength, Low Alloy Structural Tubing with Improved Atmospheric Corrosion Resistance.
27. ASTM A852/A852M - Standard Specification for Quenched and Tempered Low-Alloy Structural Steel Plate with 70 ksi (485 MPa) Minimum Yield Strength to 4 in. (100 mm) Thick.
28. ASTM A913/A913M - Standard Specification for High-Strength Low-Alloy Steel Shapes of Structural Quality, Produced by Quenching and Self-Tempering Process (QST).
29. ASTM A1016 / A1016M - 11a Standard Specification for General Requirements for Ferritic Alloy Steel, Austenitic Alloy Steel, and Stainless Steel Tubes
30. ASTM A992/A992M - Standard Specification for Structural Steel Shapes.
31. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
32. ASTM E94 - Standard Guide for Radiographic Examination.
33. ASTM E164 - Standard Practice for Ultrasonic Contact Examination of Weldments.
34. ASTM E165 - Standard Test Method for Liquid Penetrant Examination.
35. ASTM E709 - Standard Guide for Magnetic Particle Examination.

36. ASTM F436 - Standard Specification for Hardened Steel Washers.
37. ASTM F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs
38. ASTM F594 - Standard Specification for Stainless Steel Nuts
39. ASTM F959 - Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners.
40. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.
41. ASTM F1852 - Standard Specification for Twist Off Type Tension Control Structural Bolt/Nut/Washer Assemblies, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
42. ASTM F2329 - Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners.
43. ASTM G108 -Standard Test Method for Electrochemical Reactivation (EPR) for Detecting Sensitization of AISI Type 304 and 304L Stainless Steel

C. American Welding Society:

1. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.
2. AWS D1.1 - Structural Welding Code - Steel.
3. AWS D1.6 - Structural Welding Code - Stainless Steel.

D. Green Seal:

1. GC-03 - Anti-Corrosive Paints.

E. Research Council on Structural Connections:

1. RCSC - Specification for Structural Joints Using ASTM A325 or A490 Bolts.

F. SSPC: The Society for Protective Coatings:

1. SSPC - Steel Structures Painting Manual.
2. SSPC Paint 15 - Steel Joist Shop Paint.
3. SSPC Paint 20 - Zinc-Rich Primers (Type I - Inorganic and Type II - Organic).
4. SSPC SP 3 - Power Tool Cleaning.
5. SSPC SP 6 - Commercial Blast Cleaning.
6. SSPC SP 10 - Near-White Blast Cleaning.

G. American Society of Civil Engineers

1. ANSI/ASCE-8-90 Specification for the design of cold formed stainless steel structural members

### 1.3 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.

B. Coordinate work with the following:

1. Section 05 21 00, Section 05 31 13 for framed openings other than structural steel.

## 1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Shop Drawings:

1. Indicate profiles, sizes, spacing, locations of structural members, attachments, and bolts.
2. Connections.
3. Cambers and loads.
4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections.
5. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.
6. Include embedment drawings.
7. Identify locations and connections of the seismic-load-resisting system.
8. Indicate locations and dimensions of protected zones.

C. Manufacturer's Mill Certificate: Certify products meet or exceed specified requirements.

D. Mill Test Reports: Submit indicating structural strength, destructive and non-destructive test analysis.

E. Product Test Reports for the following:

1. Bolts, nuts, and washers including mechanical properties and chemical analysis.
2. Direct-tension indicators.
3. Tension-control, high-strength bolt-nut-washer assemblies.
4. Shear stud connectors.
5. Shop primers.
6. Non-shrink grout.

F. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within previous 12 months.

G. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

H. Source quality-control reports.

## 1.5 QUALITY ASSURANCE

A. Perform Work in accordance with the applicable of the following:

1. Structural Steel: AISC 303, ASIC 341 and AISC 360.
2. Architecturally Exposed Structural Steel: AISC 303, Section 10.
3. High Strength Bolted Connections: RCSC Specification for Structural Joints Using ASTM A 325 or A 490 Bolts.

B. Maintain one copy of each document on site.



## 1.6 QUALIFICATIONS

- A. Fabricator: Company specializing in performing Work of this section with minimum five years documented experience with the following current AISC Certification.
  - 1. Standard for Steel Building Structures (STD)
- B. Erector: Company specializing in performing Work of this section with minimum five years documented experience with the following current AISC Certification.
  - 1. Certified Steel Erector (CSE)
- C. Shop Painter: Company specializing in performing Work of this section with minimum five years documented experience.
- D. Welders and Welding Procedures: AWS D1.1 and D1.6 qualified within previous 12 months.
- E. Design all connections not detailed on drawings under direct supervision of a Structural Engineer experienced in design of this Work and licensed in State of Illinois.

## PART 2 PRODUCTS

### 2.1 STRUCTURAL STEEL

- A. Structural W-Shapes: ASTM A992/A992M; Grade 50.
- B. Channels and Angles: ASTM A36/A36M; Grade 36.
- C. Rectangular Hollow Structural Sections: ASTM A500/A500M, Grade B.
- D. Structural Plates and Bars: ASTM A572/A572M; Grade 50.

### 2.2 BOLTS, CONNECTORS, AND ANCHORS

- A. Bolts: Heavy hex, structural type.
  - 1. ASTM A325; Type 1, plain, or Type 3, plain.
  - 2. ASTM A490; Type 1 or 3, plain
- B. Nuts: ASTM A563; heavy hex type.
  - 1. Finish: Plain.
- C. Stainless Steel Bolts: ASTM F593; Type 316
- D. Stainless Steel Nuts: ASTM F594; Type 316
- E. Washers: ASTM F436; Type 1 or 3, circular. Furnish clipped washers where space limitations require.
  - 1. Finish: Plain.
- F. Anchor Rods: ASTM F1554; Grade 55, weldable.
  - 1. Shape: Hooked.

G. Threaded Rods: ASTM A572/A572M; Grade 50.

1. Finish: Unfinished.

H. Forged Structural Steel Hardware:

1. Clevises and Turnbuckles: ASTM A29; Grade 1035.
2. Eye Nuts and Eye Bolts: ASTM A29; Grade 1030.
3. Sleeve Nuts: ASTM A29; Grade 1018.
4. Rod Ends, Yoke Ends and Pins, Cotter Pins, and Coupling Nuts: Carbon steel.

## 2.3 WELDING MATERIALS

A. Welding Materials: AWS D1.1; type required for materials being welded.

B. Welding Materials: AWS D1.6; type required for Stainless Steel materials.

## 2.4 FABRICATION

A. Continuously seal joined members by intermittent welds and plastic filler. Continuous welds. Grind exposed welds smooth.

B. Fabricate connections for bolt, nut, and washer connectors

## 2.5 FINISHES

A. Prepare structural component surfaces in accordance with SSPC SP 3.

B. Shop prime structural steel members. Do not prime surfaces that will be field welded, in contact with concrete.

C. Paint to match existing structure and surrounding components.

## 2.6 ACCESSORIES

A. Grout: Non-shrink type, pre-mixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing additives, capable of developing minimum compressive strength of 7,000 psi at 28 days.

B. Shop Primer: SSPC Paint 15, Type 1, red oxide.

C. Touch-Up Primer: Match shop primer.

## 2.7 SOURCE QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Testing, inspection and analysis requirements.

B. Contractor shall retain an independent third party for testing and inspection services. Services shall include shop testing bolted and welded connections as specified for field quality control tests.

C. Contractor shall submit testing and inspection reports to E.O.R..

- D. When fabricator is approved by authority having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify bearing surfaces are at correct elevation.
- C. Verify anchors rods are set in correct locations and arrangements with correct exposure for steel attachment.

### 3.2 PREPARATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Furnish templates for installation of anchor rods and embedments in concrete and masonry work.

### 3.3 ERECTION

- A. Allow for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in alignment until completion of erection and installation of permanent bracing.
- B. Field weld components indicated on shop drawings.
- C. Field connect members with threaded fasteners; torque to required resistance.
- D. Do not field cut or alter structural members without approval of Architect/Engineer.
- E. After erection, touch up welds and abrasions to match shop finishes.

### 3.4 GROUT INSTALLATION

- A. Grout in accordance with Section 03 30 00.
- B. Shim bearing plates and equipment supports to proper elevation, snug tighten anchor bolts.
- C. Fill void under bearing surface with grout. Install and pack grout to remove air pockets.
- D. Moist cure grout.
- E. Remove forms after grout is set. Trim grout edges to from smooth surface, splayed 45 degrees.
- F. Tighten anchor bolts after grout has cured for a minimum of 3 days.

### 3.5 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- C. Maximum Offset From Alignment: 1/4 inch.

### 3.6 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Requirements for inspecting, testing.
- B. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
  - 1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- C. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
  - 1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
  - 2. Clean and relubricate bolts and nuts that become dry or rusty before use.
  - 3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication
- D. Bolted Connections: Inspect in accordance with AISC 303.
  - 1. Visually inspect all bolted connections.
- E. Welding: Inspect welds in accordance with AWS D1.1.
  - 1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
  - 2. Visually inspect all welds.
  - 3. Ultrasonic Inspection: ASTM E164; perform on all full penetration welds.
  - 4. Liquid Penetrant Inspection: ASTM E165.
- F. Correct defective bolted connections and welds.
- G. Contractor shall retain an independent third party for testing and inspection services. Services shall include bolted and welded connections.
- H. Contractor shall submit testing and inspection reports to E.O.R.

END OF SECTION

## SECTION 05 50 00

### METAL FABRICATIONS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes shop fabricated metal items.
  - 1. Structural supports for miscellaneous attachments.
- B. Related Sections:
  - 1. Section 05 12 00 - Structural Steel Framing: Structural steel column anchor bolts.
  - 2. Section 09 90 00 - Painting and Coating: Field applied paint finish.

##### 1.2 REFERENCES

- A. Aluminum Association:
  - 1. AA DAF-45 - Designation System for Aluminum Finishes.
- B. American National Standards Institute:
  - 1. ANSI A14.3 - Ladders - Fixed - Safety Requirements
- C. ASTM International:
  - 1. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
  - 2. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
  - 3. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - 4. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
  - 5. ASTM A276 - Standard Specification for Stainless Steel Bars and Shapes.
  - 6. ASTM A297/A297M - Standard Specification for Steel Castings, Iron-Chromium and Iron-Chromium-Nickel, Heat Resistant, for General Application.
  - 7. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
  - 8. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
  - 9. ASTM A354 - Standard Specification for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners.
  - 10. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
  - 11. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
  - 12. ASTM A554 - Standard Specification for Welded Stainless Steel Mechanical Tubing.
  - 13. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts.
  - 14. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

15. ASTM A992/A992M - Standard Specification for Structural Steel Shapes.
16. ASTM B26/B26M - Standard Specification for Aluminum-Alloy Sand Castings.
17. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
18. ASTM B210 - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes.
19. ASTM B211 - Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod, and Wire.
20. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
21. ASTM F436 - Standard Specification for Hardened Steel Washers.
22. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.

D. American Welding Society:

1. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.
2. AWS D1.1 - Structural Welding Code - Steel.
3. AWS D1.6 - Structural Welding Code - Stainless Steel.

E. National Ornamental & Miscellaneous Metals Association:

1. NOMMA Guideline 1 - Joint Finishes.

F. SSPC: The Society for Protective Coatings:

1. SSPC - Steel Structures Painting Manual.
2. SSPC SP 1 - Solvent Cleaning.
3. SSPC SP 10 - Near-White Blast Cleaning.
4. SSPC Paint 15 - Steel Joist Shop Paint.

### 1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal requirements.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable. Indicate welded connections using standard AWS A2.0 welding symbols. Indicate net weld lengths.

C. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within previous 12 months.

### 1.4 QUALITY ASSURANCE

A. Finish joints in accordance with NOMMA Guideline 1.

### 1.5 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.

B. Accept metal fabrications on site in labeled shipments. Inspect for damage.

C. Protect metal fabrications from damage by exposure to weather.

## 1.6 FIELD MEASUREMENTS

A. Verify field measurements are as indicated on shop drawings. instructed by manufacturer.

## PART 2 PRODUCTS

### 2.1 MATERIALS - STEEL

- A. Ferrous Metals: For fabrication of miscellaneous metal work that will be exposed to view, use only materials that are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness.
1. Steel Plates, Shapes, and Bars: ASTM 36.
  2. Steel Bar Grating: ASTM A569 and ASTM A36.
  3. Steel Tubing: Cold formed, ASTM A500; or hot-rolled, ASTM A501.
  4. Structural Steel Sheet: Hot-rolled, ASTM A570, or cold-rolled ASTM A611, Class 1, of grade required for design loading.
  5. Galvanized Structural Steel Sheet: ASTM A446, of grade required for design loading. Coating designation as indicated, or if not indicated, G90.
  6. Steel Pipe: ASTM A53; type and grade (if applicable) as selected by fabricator and as required for design loading; black finish unless galvanized is indicated; standard weight (Schedule 40), unless otherwise indicated.
- B. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A47, or cast steel ASTM A27. Provide bolts, washers and shims as required, hot dip galvanized, ASTM A153.
- C. Provide zinc-coated fasteners for exterior use or where built into exterior walls. Select fasteners for type, grade and class required.
- D. Bolts and Nuts: Regular hexagon head type, ASTM A307, Grade A. Galvanized to ASTM A153 for galvanized components.
- E. Machine Screws: Cadmium plated steel, FS FF-S-92.
- F. Wood Screws: Flat head carbon steel, FS FF-S-111.
- G. Plain Washers: Round, carbon steel, FS FF-W-92.
- H. Masonry Anchorage Devices: Expansion shields, FS FF-S-325.
- I. Toggle Bolts: Tumble-wing type, FS FF-B-588, type, class and style as required.
- J. Lock Washers: Helical spring type carbon steel, FS FF-W-84.
- K. Shop Primer for Ferrous Metal:

1. Manufacturer's or Fabricator's standard, fast curing, lead-free, "universal" primer; selected for good resistance to normal atmospheric corrosion, for compatibility with finish paint systems indicated and for capability to provide a sound foundation for field-applied topcoats despite prolonged exposure; complying with performance requirements of FS TT-P-645. Apply at 2.0 dry mil minimum to interior steel surfaces (SSPC zone 1A).
2. Tnemec 90-97 Tmeme Zinc metal primer applied at 2.5 to 3.0 dry mils. Apply to exterior steel surfaces (SSPC on 1B).

L. Welding Materials: AWS D1.1; type required for materials being welded.

M. Touch-Up Primer for Galvanized Surfaces: SSPC Paint 20 Type II Organic zinc rich.

## 2.2 LINTELS

- A. Lintels: Steel sections, size and configuration as indicated on Drawings, length to allow 8 inches minimum bearing on both sides of opening.
1. Exterior Locations: Galvanized. Finish paint.
  2. Interior Locations: Prime paint. Finish paint.

## 2.3 LEDGE AND SHELF ANGLES

- A. Ledge and Shelf Angles, Channels and Plates Not Attached to Structural Framing: For support of metal decking, joists, masonry; prime paint, one coat.

## 2.4 ELEVATOR SILL ANGLES AND HOIST BEAMS

- A. Sill Angles: Steel sections as indicated on Drawings for support of elevator sills; prime paint, one coat.
- B. Hoist Beam: Steel wide flange sections, shape and size required to support applied loads with maximum deflection of 1/240 of the span; prime paint, one coat.

## 2.5 LADDERS

- A. Access Ladders: ANSI A14.3, Steel welded construction:
1. Side Rails: 3/8 x 2 inches side rails spaced at 20 inches.
  2. Rungs: one inch diameter solid rod spaced 12 inches on center.
  3. Mounting: Space rungs 4-1/2 inches from wall surface; with steel mounting brackets and attachments.
  4. Finish: Prime paint, one coat. Finish paint.

## 2.6 STRUCTURAL SUPPORTS

- A. Other Structural Supports: Steel sections, shape and size as indicated on Drawings, required to support applied loads with maximum deflection of 1/240 of the span; prime paint, one coat.



## 2.7 DOWNSPOUT SHOES

- A. Manufacturers
  - 1. Neenah Foundry Co., Model R-4926-29 Series.
  - 2. Substitutions: Section 01 60 00- Product Requirements.
- B. Downspout Shoes: Cast iron, with 5/8" fastening lug slots, one factory-applied coat of black primer, sized to fit downspouts, offset spigot. Finish paint.

## 2.8 ANCHOR BOLTS

- A. Anchor Rods: ASTM A307; Grade A.
  - 1. Shape: Hooked.
  - 2. Furnish with nut and washer; unfinished.

## 2.9 FABRICATION

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Continuously seal joined members by continuous welds.
- D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

## 2.10 FACTORY APPLIED FINISHES - STEEL

- A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- B. Do not prime surfaces in direct contact with concrete or where field welding is required.
- C. Prime paint items with one coat except where galvanizing is specified.
- D. Galvanizing: ASTM A123/A123M; hot dip galvanize after fabrication.
- E. Galvanizing for Fasteners, Connectors, and Anchors:
  - 1. Hot-Dipped Galvanizing: ASTM A153/A153M.
  - 2. Mechanical Galvanizing: ASTM B695; Class 50 minimum.

## 2.11 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify field conditions are acceptable and are ready to receive Work.

### 3.2 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply steel items required to be cast into concrete or embedded in masonry with setting templates to appropriate sections.

### 3.3 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Make provisions for erection stresses. Install temporary bracing to maintain alignment, until permanent bracing and attachments are installed.
- C. Field weld components indicated on Drawings and shop drawings.
- D. Perform field welding in accordance with AWS D1.1.
- E. Field connect members with threaded fasteners; torque to required resistance.
- F. Obtain approval of Architect/Engineer prior to site cutting or making adjustments not scheduled.
- G. After erection, touch up welds, abrasions, and damaged finishes with prime paint or galvanizing repair paint to match shop finishes.
- H. Install steel lintels at all mechanical openings through walls.

### 3.4 ERECTION TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Maximum Variation From Plumb: 1/4 inch per story or for every 12 feet in height whichever is greater, non-cumulative.
- C. Maximum Offset From Alignment: 1/4 inch.
- D. Maximum Out-of-Position: 1/4 inch.

### 3.5 FIELD QUALITY CONTROL

- A. Welding: Inspect welds in accordance with AWS D1.1.

END OF SECTION



## SECTION 07 92 00 - JOINT SEALANTS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:
  - 1. Silicone joint sealants.
  - 2. Mildew-resistant joint sealants.

#### 1.3 PREINSTALLATION MEETINGS

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

#### 1.4 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- D. Joint-Sealant Schedule: Include the following information:
  - 1. Joint-sealant application, joint location, and designation.
  - 2. Joint-sealant manufacturer and product name.
  - 3. Joint-sealant formulation.
  - 4. Joint-sealant color.

#### 1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified testing agency.
- B. Product Test Reports: For each kind of joint sealant, for tests performed by manufacturer and witnessed by a qualified testing agency.

- C. Preconstruction Laboratory Test Schedule: Include the following information for each joint sealant and substrate material to be tested:
  - 1. Joint-sealant location and designation.
  - 2. Manufacturer and product name.
  - 3. Type of substrate material.
  - 4. Proposed test.
  - 5. Number of samples required.
- D. Preconstruction Laboratory Test Reports: From sealant manufacturer, indicating the following:
  - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
  - 2. Interpretation of test results and written recommendations for primers and substrate preparation are needed for adhesion.
- E. Preconstruction Field-Adhesion-Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.
- F. Field-Adhesion-Test Reports: For each sealant application tested.
- G. Sample Warranties: For special warranties.

## 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.
- B. Product Testing: Test joint sealants using a qualified testing agency.
  - 1. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.
- C. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

## 1.7 PRECONSTRUCTION TESTING

- A. Preconstruction Laboratory Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
  - 1. Adhesion Testing: Use ASTM C 794 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
  - 2. Compatibility Testing: Use ASTM C 1087 to determine sealant compatibility when in contact with glazing and gasket materials.
  - 3. Stain Testing: Use ASTM C 1248 to determine stain potential of sealant when in contact with masonry substrates.

4. Submit manufacturer's recommended number of pieces of each type of material, including joint substrates, joint-sealant backings, and miscellaneous materials.
  5. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
  6. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures, including use of specially formulated primers.
  7. Testing will not be required if joint-sealant manufacturers submit data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, staining of, and compatibility with joint substrates and other materials matching those submitted.
- B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:
1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
  2. Conduct field tests for each kind of sealant and joint substrate.
  3. Notify Architect seven days in advance of dates and times when test joints will be erected.
  4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.
    - a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
      - 1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
  5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
  6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

## 1.8 FIELD CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
  2. When joint substrates are wet.
  3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
  4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

## 1.9 WARRANTY

- A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: Five years from date of Substantial Completion.
- C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
  - 1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
  - 2. Disintegration of joint substrates from causes exceeding design specifications.
  - 3. Mechanical damage caused by individuals, tools, or other outside agents.
  - 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

## PART 2 - PRODUCTS

### 2.1 JOINT SEALANTS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

### 2.2 SILICONE JOINT SEALANTS

- A. Silicone, S, NS, 100/50, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
  - 1. Manufacturer
    - 1) GE Construction Sealants, 9930 Kincey Ave., Huntersville, NC, 28078, phone: 877-943-7325, <http://www.siliconeforbuilding.com>.
    - 2) As selected by the manufacturer
- B. Silicone, S, NS, 50, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.
  - 1. Manufacturer



- 1) GE Construction Sealants, 9930 Kinsey Ave., Huntersville, NC, 28078, phone: 877-943-7325, <http://www.siliconeforbuilding.com>.
  - 2) As selected by the manufacturer
- C. Silicone, S, NS, 35, NT: Single-component, nonsag, plus 35 percent and minus 35 percent movement capability. nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 35, Use NT.
1. Manufacturer
    - 1) GE Construction Sealants, 9930 Kinsey Ave., Huntersville, NC, 28078, phone: 877-943-7325, <http://www.siliconeforbuilding.com>.
    - 2) As selected by the manufacturer
- D. Silicone, S, NS, 25, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.
1. Manufacturer
    - 1) GE Construction Sealants, 9930 Kinsey Ave., Huntersville, NC, 28078, phone: 877-943-7325, <http://www.siliconeforbuilding.com>.
    - 2) As selected by the manufacturer
- E. Silicone, Acid Curing, S, NS, 25, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant: ASTM C 920, Type S, Grade NS, Class 25, Use NT.
1. Manufacturer
    - 1) Dow Corning Corporation, P.O. Box 994, Midland, MI 48686-0994, phone: 800-248-2481, fax: 866-265-1302, <http://www.dowcorning.com>.
    - 2) As selected by the manufacturer
- F. Silicone, S, NS, 100/50, T, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Uses T and NT.
1. Manufacturer
    - 1) Dow Corning Corporation, P.O. Box 994, Midland, MI 48686-0994, phone: 800-248-2481, fax: 866-265-1302, <http://www.dowcorning.com>.
    - 2) As selected by the manufacturer
- G. Silicone, S, NS, 50, T, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Uses T and NT.
1. Manufacturer
    - 1) Dow Corning Corporation, P.O. Box 994, Midland, MI 48686-0994, phone: 800-248-2481, fax: 866-265-1302, <http://www.dowcorning.com>.
    - 2) As selected by the manufacturer
- H. Silicone, S, NS, 25, T, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Uses T and NT.
1. Manufacturer
    - 1) Dow Corning Corporation, P.O. Box 994, Midland, MI 48686-0994, phone: 800-248-2481, fax: 866-265-1302, <http://www.dowcorning.com>.
    - 2) As selected by the manufacturer

- I. Silicone, S, P, 100/50, T, NT: Single-component, pourable, plus 100 percent and minus 50 percent movement capability traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade P, Class 100/50, Uses T and NT.
  - 1. Manufacturer
    - 1) May National Associates, Inc., Sika Corporation, 201 Polito Avenue, Lyndhurst, NJ 07071, phone: 800-933-SIKA, <http://usa.sika.com>.
    - 2) As selected by the manufacturer
  
- J. Silicone, S, P, 25, T, NT: Single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade P, Class 25, Uses T and NT.
  - 1. Manufacturer
    - 1) May National Associates, Inc., Sika Corporation, 201 Polito Avenue, Lyndhurst, NJ 07071, phone: 800-933-SIKA, <http://usa.sika.com>.
    - 2) As selected by the manufacturer
  
- K. Silicone, M, P, 100/50, T, NT: Multicomponent, pourable, plus 100 percent and minus 50 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type M, Grade P, Class 100/50, Uses T and NT.
  - 1. Manufacturer
    - 1) May National Associates, Inc., Sika Corporation, 201 Polito Avenue, Lyndhurst, NJ 07071, phone: 800-933-SIKA, <http://usa.sika.com>.
    - 2) As selected by the manufacturer

## 2.3 MILDEW-RESISTANT JOINT SEALANTS

- A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.
  
- B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.
  - 1. Manufacturer
    - 1) Pecora Corporation, 165 Wambold Road, Harleyville, PA 19438, phone: 800-523-6688, <http://www.pecora.com>.
    - 2) As selected by the manufacturer
  
- C. STPE, Mildew Resistant, S, NS, 50, NT: Mildew-resistant, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, silyl-terminated polyether joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.
  - 1. Manufacturer
    - 1) BASF Corporation – Construction Chemicals, 23700 Chagrin Boulevard, Beachwood, OH 44122, phone: 800-268-9990, <https://www.master-builders-solutions.basf.us/en-us>.
    - 2) As selected by the manufacturer

## 2.4 JOINT-SEALANT BACKING

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
  - 1. Manufacturer
    - 1) BASF Corporation – Construction Chemicals, 23700 Chagrin Boulevard, Beachwood, OH 44122, phone: 800-268-9990, <https://www.master-builders-solutions.basf.us/en-us>.
    - 2) As selected by the manufacturer
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

## 2.5 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
  2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
    - a. Concrete.
    - b. Masonry.
    - c. Unglazed surfaces of ceramic tile.
    - d. Exterior insulation and finish systems.
  3. Remove laitance and form-release agents from concrete.
  4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
    - a. Metal.
    - b. Glass.
    - c. Porcelain enamel.
    - d. Glazed surfaces of ceramic tile.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

### 3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  1. Do not leave gaps between ends of sealant backings.
  2. Do not stretch, twist, puncture, or tear sealant backings.

3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
1. Place sealants so they directly contact and fully wet joint substrates.
  2. Completely fill recesses in each joint configuration.
  3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
1. Remove excess sealant from surfaces adjacent to joints.
  2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  3. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.
  4. Provide flush joint profile at locations indicated on Drawings according to Figure 8B in ASTM C 1193.
  5. Provide recessed joint configuration of recess depth and at locations indicated on Drawings according to Figure 8C in ASTM C 1193.
    - a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

### 3.4 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
1. Extent of Testing: Test completed and cured sealant joints as follows:
    - a. Perform 10 tests for the first 1000 feet (300 m) of joint length for each kind of sealant and joint substrate.
    - b. Perform one test for each 1000 feet (300 m) of joint length thereafter or one test per each floor per elevation.
  2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
    - a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
  3. Inspect tested joints and report on the following:

- a. Whether sealants filled joint cavities and are free of voids.
  - b. Whether sealant dimensions and configurations comply with specified requirements.
  - c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.
4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.
  5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
- B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

### 3.5 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

### 3.6 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION

## SECTION 08 36 00

### SECTIONAL OVERHEAD DOORS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Glazed Aluminum Sectional Overhead Doors.
- B. Electric Operators and Controls.
- C. Operating Hardware, tracks, and support.

##### 1.2 RELATED SECTIONS

- A. Section 05 50 00 - Metal Fabrications: Steel frame and supports.
- B. Section 07 92 00 - Joint Sealers
- C. Section 09 90 00 - Paints and Coatings
- D. Section 26 05 33 - Raceway and Boxes: Empty conduit from control station to door operator.

##### 1.3 REFERENCES

- A. [ANSI/DASMA 102](#) - American National Standard Specifications for Sectional Overhead Type Doors.

##### 1.4 DESIGN / PERFORMANCE REQUIREMENTS

- A. Wind Loads: Design and size components to withstand loads caused by pressure and suction of wind acting normal to plane of wall as calculated in accordance with applicable code.
- B. Wiring Connections: Requirements for electrical characteristics.
  - 1. 115 volts, single phase, 60 Hz.
- C. Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

##### 1.5 SUBMITTALS

- A. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
  2. Storage and handling requirements and recommendations.
  3. Installation methods.
- C. Shop Drawings: Indicate plans and elevations including opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.
- D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- E. Operation and Maintenance Data.

## 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.
- B. Installer Qualifications: Authorized representative of the manufacturer with minimum five years documented experience.
- C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened labeled packaging until ready for installation.
- B. Protect materials from exposure to moisture until ready for installation.
- C. Store materials in a dry, ventilated weathertight location.

## 1.8 PROJECT CONDITIONS

- A. Pre-Installation Conference: Convene a pre-installation conference just prior to commencement of field operations, to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Overhead Door Corp, Clopay Building Products, Northwest Door.
- B. Substitutions: Section 01 25 13 – Product Substitution Procedures.

### 2.2 GLAZED ALUMINUM SECTIONAL OVERHEAD DOORS



- A. Glazed Sectional Overhead Doors: 521 Series Aluminum Doors by Overhead Door Corporation or equal.
1. Door Assembly: Stile and rail assembly secured with 1/4 inch (6 mm) diameter through rods.
    - a. Panel Thickness: 1-3/4 inches (44 mm).
    - b. Center Stile Width: 2-11/16 inches (68 mm)
    - c. End Stile Width: 3-5/16 inches (84 mm)
    - d. Intermediate Rail Pair Width: 3-11/16 inches (94 mm).
    - e. Top Rail Width:
      - 1) 3-3/4 inches (95 mm).
    - f. Bottom Rail Width:
      - 1) 3-3/4 inches (95 mm).
    - g. Aluminum Panels: 0.050 inch (1.3 mm) thick, aluminum.
    - h. Stiles and Rails: 6063 - T6 aluminum.
    - i. Springs: 10,000 cycles.
    - j. Glazing: 1/8 inch (3 mm) Tempered glass.
  2. Finish and Color:
    - a. Anodized Finish: Clear anodized.
  3. Windload Design: Provide to meet the Design/Performance requirements specified.
  4. Hardware: Galvanized steel hinges and fixtures. Ball bearing rollers with hardened steel races.
  5. Lock: Interior galvanized single unit.
  6. Weatherstripping:
    - a. Flexible bulb-type strip at bottom section.
    - b. Flexible Jamb seals.
    - c. Flexible Header seal.
  7. Track: Provide track as recommended by manufacturer to suit loading required and clearances available.
  8. Manual Operation: Chain hoist.
  9. Electric Motor Operation: Provide UL listed electric operator, size and type as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per second. Operator shall meet UL325/2010 requirements for continuous monitoring of safety devices.
    - a. Entrapment Protection: Required for momentary contact, includes radio control operation.
      - 1) Pneumatic sensing edge up to 18 feet (5.5 m) wide. Constant contact only complying with UL 325/2010.
      - 2) Electric sensing edge monitored to meet UL 325/2010.
      - 3) Photoelectric sensors monitored to meet UL 325/2010.
    - b. Operator Controls:
      - 1) Push-button operated control stations with open, close, and stop buttons.
      - 2) Key operated control stations with open, close, and stop buttons.
      - 3) Push-button and key operated control stations with open, close, and stop buttons.
      - 4) Surface mounting.
      - 5) Interior location.

### PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until openings have been properly prepared.
- B. Verify wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.
- C. Verify electric power is available and of correct characteristics.
- D. 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 overhead doors and track in accordance with approved shop drawings and the manufacturer's printed instructions.
- B. Coordinate installation with adjacent work to ensure proper clearances and allow for maintenance.
- C. Anchor assembly to wall construction and building framing without distortion or stress.
- D. Securely brace door tracks suspended from structure. Secure tracks to structural members only.
- E. Fit and align door assembly including hardware.
- F. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.

### 3.4 CLEANING AND ADJUSTING

- A. Adjust door assembly to smooth operation and in full contact with weatherstripping.
- B. Clean doors, frames and glass.
- C. Remove temporary labels and visible markings.

### 3.5 PROTECTION

- A. Do not permit construction traffic through overhead door openings after adjustment and cleaning.
- B. Protect installed products until completion of project.

- C. Touch-up, damaged coatings and finishes and repair minor damage before Substantial Completion.

END OF SECTION



## SECTION 09 90 00 - PAINTING AND COATING

### PART 1 GENERAL

#### 1.1 SUMMARY

- A. Section includes surface preparation and field application of paints and other coatings.

#### 1.2 REFERENCES

- A. ASTM International:
1. ASTM D16 - Standard Terminology Relating to Paint, Varnish, Lacquer, and Related Products.
  2. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials.
  3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. Green Seal:
1. GC-03 - Anti-Corrosive Paints.
  2. GS-11 - Product Specific Environmental Requirements.
- C. National Fire Protection Association:
1. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials.
- D. Painting and Decorating Contractors of America:
1. PDCA - Architectural Painting Specification Manual.
- E. South Coast Air Quality Management District:
1. SCAQMD Rule 1113 - Architectural Coatings.
- F. SSPC: The Society for Protective Coatings:
1. SSPC - Steel Structures Painting Manual.
- G. Underwriters Laboratories Inc.:
1. UL 723 - Tests for Surface Burning Characteristics of Building Materials.

#### 1.3 DEFINITIONS

- A. Conform to ASTM D16 for interpretation of terms used in this section.

#### 1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit data on finishing products and special coatings.
- C. Samples:
  - 1. Submit two paper chip samples illustrating full range of colors available for each surface finishing product scheduled.
- D. Manufacturer's Installation Instructions: Submit special surface preparation procedures, and substrate conditions requiring special attention.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.
- B. Operation and Maintenance Data: Submit data on cleaning, touch-up, and repair of painted and coated surfaces.

#### 1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Applicator: Company specializing in performing Work of this section with minimum three years documented experience and approved by manufacturer.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- C. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- D. Paint Materials: Store at minimum ambient temperature of 45 degrees F and maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

#### 1.8 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements.
- B. Do not apply materials when surface and ambient temperatures are outside temperature ranges required by paint product manufacturer.

- C. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.
- D. Provide lighting level of 80 foot candle measured mid-height at substrate surface.

#### 1.9 SEQUENCING

- A. Section 01 10 00 - Summary: Work sequence.
- B. Verify existing conditions and requirements of other trades before starting Work.
- C. Sequence application to the following:
  - 1. Do not apply finish coats until paintable sealant is applied.
  - 2. Back prime wood trim before installation of trim.

#### 1.10 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish five-year manufacturer warranty for paints and coatings.

#### 1.11 EXTRA MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Spare parts and maintenance products.
- B. Supply 1 gallon of each color, type, and surface texture; store where directed by Owner.
- C. Label container with color, type, and room locations, in addition to manufacturer's label.

### PART 2 PRODUCTS

#### 2.1 PAINTS AND COATINGS

- A. Manufacturers:
  - 1. The Glidden Co.
  - 2. MAB Paints.
  - 3. Benjamin Moore.
  - 4. Sherwin-Williams.
  - 5. Pittsburg Paints.
  - 6. Substitutions: Per Spec Section 01 25 33

#### 2.2 COMPONENTS

- A. Coatings: Ready mixed, except field catalyzed coatings. Prepare coatings:
  - 1. To soft paste consistency, capable of being readily and uniformly dispersed to homogeneous coating.
  - 2. For good flow and brushing properties.
  - 3. Capable of drying or curing free of streaks or sags.

- B. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve finishes specified; commercial quality.
- C. Patching Materials: Latex filler.
- D. Fastener Head Cover Materials: Latex filler.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify surfaces and substrate conditions are ready to receive Work as instructed by product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of Work. Report conditions capable of affecting proper application.
- C. Test shop applied primer for compatibility with subsequent cover materials.
- D. Do not apply paint pavement markings to concrete surfaces until concrete has cured for 28 days.
- E. Measure moisture content of surfaces using electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
  - 1. Plaster and Gypsum Wallboard: 12 percent.
  - 2. Masonry, Concrete and Concrete Unit Masonry: 12 percent.

### 3.2 PREPARATION

- A. Surface Appurtenances: Remove electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.
- B. Surfaces: Correct defects and clean surfaces capable of affecting Work of this section. Remove or repair existing coatings exhibiting surface defects.
- C. Marks: Seal with shellac those which may bleed through surface finishes.
- D. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- E. Gypsum Board Surfaces: Fill minor defects with filler compound. Spot prime defects after repair.
- F. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.



- G. Concrete Surfaces Scheduled to Receive Paint Finish: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.
- H. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
- I. Uncoated Steel and Iron Surfaces: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand wire brushing or sandblasting; clean by washing with solvent. Apply treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.
- J. Concrete Floors: Remove contamination, acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.
- K. Interior Wood Items Scheduled to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats.
- L. Metal Doors Scheduled for Painting: Prime metal door top and bottom edge surfaces.

### 3.3 APPLICATION

- A. Multiple colors may be selected.
- B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- C. Apply each coat to uniform appearance. Apply each coat of paint slightly darker than preceding coat unless specified otherwise.
- D. Sand metal surfaces lightly between coats to achieve required finish.
- E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- F. Finishing Mechanical And Electrical Equipment:
  1. Refer to Division 22, Division 23, and Division 26 for schedule of color-coding and identification banding of equipment, ductwork, piping, and conduit.
  2. Paint shop primed equipment.
  3. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
  4. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are shop finished.

5. Paint interior surfaces of air ducts visible through grilles and louvers with one coat of flat black paint to visible surfaces. Paint dampers exposed behind louvers, and grilles to match face panels.
6. Paint exposed conduit and electrical equipment occurring in finished areas.
7. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.
8. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

### 3.4 FIELD QUALITY CONTROL

- A. Section 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect and test questionable coated areas.

### 3.5 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.
- B. Collect waste material which may constitute fire hazard, place in closed metal containers, and remove daily from site.

### 3.6 PROTECTION OF INSTALLED CONSTRUCTION

- A. Protect Work of other trades and surfaces not being painted.
- B. Automatic fire sprinklers must not be painted and must be protected from paint over spray. Any sprinklers inadvertently painted must be replaced rather than cleaned.
- C. Protect completed Work from damage by other trades.

### 3.7 SCHEDULE - SHOP PRIMED ITEMS FOR SITE FINISHING

- A. Structural Steel Framing (Section 05 12 00): Exposed surfaces.
- B. Sectional Doors (Section 08 36 00): Exposed surfaces of doors.

### 3.8 SCHEDULE - INTERIOR SURFACES

- A. Steel:
  1. One coat SW Pro Industrial Pro-Cryl Primer; B66-310 or approved equal.
    - a. Two to four mils dry.
  2. Two coats SW ProMar 200 Alkyd Semi-Gloss; B34W200 or approved equal.
    - a. Four mils wet, 1.7 mils dry.
- B. Steel - Galvanized:
  1. One coat SW Pro Industrial Pro-Cryl Primer; B66-310 or approved equal.
    - a. Two to four mils dry.
  2. Two coats SW ProMar 200 Alkyd Semi-Gloss; B34W200 or approved equal.
    - a. Four mils wet, 1.7 mils dry per coat.

- D. Interior Ferrous Metal (Exposed Structure / Decking) Finish Dry Fall-Out:
  - 1. One coat SW Save-Lite Dry Fall; B47W62 or approved equal.
    - a. Three point two mils wet.

3.8 SCHEDULE – EXTERIOR SURFACES

- A. Steel:
  - 1. One coat SW Pro Industrial Pro-Cryl Universal Primer, B66-310 Series or approved equal.
    - a. Ten mils wet, 4 mils dry.
  - 2. Two coats SW Metalatex Acrylic Semi-Gloss, B42 Series or approved equal.
    - a. Four mils wet, 1.5 mils dry per coat.
- B. Steel Galvanized:
  - 1. Two coats SW Metalatex Semi-Gloss, B42 Series or approved equal.
    - a. Four mils wet, 1.5 mils dry per coat.

END OF SECTION



## SECTION 116500

### SPORT NETS AND FABRICS

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

- A. Divider curtain netting system.
- B. Backdrop curtain fabric system.

##### 1.2 RELATED REQUIREMENTS

- A. 051200 - Structural Steel Framing; for structural steel of structure support tensioned fabric.

##### 1.3 SUBMITTALS

- A. Qualification Data: For Installer, fabricator and design engineer.
- B. Delegated-Design Submittal: For assemblies indicated to comply with performance requirements and design criteria, including analysis data and drawings signed and sealed by the qualified professional engineer responsible for their preparation including:
  - 1. Plans, elevations, sections, mounting heights, and frame assembly details
  - 2. Frame member sizes and required wall thicknesses.
  - 3. Welding requirements.
  - 4. Details of bolted and pin connections for frame assembly.
  - 5. Required sizes of bolts, pins, plates and tubing.
  - 6. Verify the fabric meets minimum engineering requirements.
  - 7. Details fabric attachment methods and identify thickness of all membrane plates, clamps and other attachment components.
  - 8. Cable sizes and pretension requirements.
  - 9. Anchor-bolt plans before foundation work begins. Include location, diameter, and projection of anchor bolts required to attach the tensioned fabric structures to foundation. Indicate column reactions at each location.
- C. Product Data: Provide product criteria, characteristics, accessories, jointing and seaming methods, and termination conditions.
- D. Shop Drawings:
  - 1. Include plans, elevations, sections, mounting heights, and frame assembly details.
  - 2. Preliminary member sizes with wall thickness.
  - 3. Preliminary footing layout and foundation design.
  - 4. Show intended fabric attachment hardware and details.
  - 5. Identify direction, details and locations of fabric seams.
  - 6. Show details of fabric dimensions including length of spans, sag curvature and actual shaded area.

- E. Samples(Provide one set of samples to Hurst-Rosche, and one set of samples to owner):
  1. Divider Netting Fabric: 8.5-inch x 11-inch samples of Divider fabric for appearance, color, and texture.
  2. Backdrop Curtain Fabric: 8.5-inch x 11-inch samples of vinyl backdrop fabric for appearance, color, texture, finish and light transmittance.
  3. Accessories: One of each exposed accessories in selected color and finish.
- F. Manufacturer's Installation Instructions: Indicate special preparation of substrate, attachment methods, and perimeter conditions requiring special attention.
- G. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.
- H. Maintenance Data: For divider netting & backdrop fabric including:
  1. Methods for maintaining tensioned fabric structure fabrics and finishes.
  2. Precautions about cleaning materials and methods that could be detrimental to fabrics, finishes, and performance.

#### 1.4 QUALITY ASSURANCE

- A. Fabric/ Netting Manufacturer's Qualifications: Company specializing in manufacturing the products specified in this section with minimum 5 years of documented experience in tensioned fabric manufacture.
- B. Designer Qualifications: Professional Structural Engineer with 5 years of documented experience in design of this work and licensed in the location of the project.
- C. Fabricator/Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years experience on projects of similar size, complexity and fabric.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. As required by the manufacturer for a warrantable installation of the installed products to meet the Performance and Design Criteria.

#### 1.6 WARRANTY

- A. Fabric/ Netting Manufacturer Warranty: Provide manufacturer's standard 15 year material replacement warranty for water resistance and tearing of fabric.

### PART 2 - PRODUCTS

#### 2.1 FABRICATORS/INSTALLERS

- A. Design is based on tensioned fabric structures being designed, engineered, fabricated and installed by one of the following qualified fabricator/installers.
  1. Baseline Sports Construction LLC, Knoxville, TN.
  2. Mahaffey Fabric Structures, Nashville, TN.
  3. Fabritecture LLC, Las Vegas, NV.

4. Signature Structures LLC, Bethlehem, PA.
5. Eide Industries Inc, Cerritos, CA.
6. Structurflex, Kansas City, MO.
7. Fabritec, Dallas, TX.
8. Birdair, Amherst, NY.

- B. Substitutions for fabricators/installers other than those listed above: See Section 012513 – Product Substitution Procedures.
1. Include qualification data indicating 10 projects of similar scope and complexity with same type of structure supporting tension fabric and tensioned fabric as specified.

## 2.2 MATERIALS

- A. Gym Divider Curtain System: Provide divider curtain as indicated on the drawings and as scheduled on the floor plan drawings. The divider curtain is netting to be black 1-3/4 inch knotted nylon. Curtains to include 4 inches finished to 2 inches width vinyl bound on all edges and have grommets on top edge spaced on 12-inch centers.
1. Curtains to be walk drawn (not mechanically operated).
- B. Vinyl Backdrop Curtain System: Provide vinyl backdrop curtains as indicated on drawings and as scheduled on the floor plan drawings. Backdrop shall be constructed of solid vinyl and have 2 inches finished width vinyl binding with grommets on 12-inch centers across top edge.
1. Curtains to be dead hung (fixed position)
  2. Color to be determined by architect/ owner.

## 2.3 PERFORMANCE AND DESIGN CRITERIA

- A. General: Design sport netting fabric that complies with applicable codes.
- B. Design fabric/ netting:
1. To withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7 including but not limited to live load, dead load, snow load, seismic loads, and wind loads.
  2. In accordance with fabric manufacturer's requirements for warranted installation.
  3. To allow for thermal movements from ambient and surface temperature changes of 120 deg F, ambient; 180 deg F, material surfaces.
  4. To limit corrosion and prevent galvanic action by isolating metals and other materials from direct contact with incompatible materials.
  5. To provide criteria on which the design is based:
    - a. Expected Fabric Life: 25 years.
- C. Cables and Fittings:
1. Fittings:
    - a. Stainless Steel Fittings: Basis of Design Product: Structural Cable components by Ronstan or PFEIFER Wire Rope & Lifting. Comparable and substituted products will be judged based on the specified performance and design criteria, features, and warranty.

- 1) Performance Criteria:
  - a) Connectors of types indicated or required, fabricated from stainless steel, and with capability to sustain, without failure, a load equal to minimum breaking strength of cable with which they are used.
  - b) Material: 316 Grade Stainless Steel and Chrome-plated Bronze threaded turnbuckle fittings to prevent galling.
- 2) Features:
  - a) Swage attachment to cables
  - b) Aesthetic of finish.
  - c) Long term adjustability.
  - d) Long term rust resistance.
- b. Galvanized Steel Fittings: Basis of Design Product: Wire Rope and end fittings by The Crosby Group or PFEIFER Wire Rope & Lifting. Comparable and substituted products will be judged based on the specified performance and design criteria, features, and warranty.
  - 1) Performance Criteria:
    - a) Connectors of types indicated or required, fabricated from hot dip galvanized steel, and with capability to sustain, without failure, a load equal to minimum breaking strength of cable with which they are used.
  - 2) Features:
    - a) Industrial Finish.
    - b) Long term rust reduction.
- 2. Structural Cable:
  - a. Stainless Steel Strand: Complying with ASTM A 368; strand configuration, diameter, cable constructions and minimum breaking load to be selected by delegated design engineer.
  - b. Galvanized Wire Rope: Complying with ASTM A 603; strand configuration, diameter, cable constructions and minimum breaking load to be selected by delegated design engineer.

## 2.4 ACCESSORIES

- A. All accessory materials required by the manufacturer for a warrantable installation of the installed products in a manner that meets the Performance and Design Criteria.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify existing conditions meet the manufacturer's requirements before starting work.

### 3.2 PREPARATION

- A. Prepare surfaces to receive work in accordance with manufacturer's instructions.



### 3.3 INSTALLATION

- A. General: Install all materials in accordance with manufacturer's instructions based on conditions present.
- B. Structure Supporting Fabric/ netting:
  - 1. Clean and strip primed steel items to bare metal where site welding is required.
  - 2. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.
  - 3. Install items plumb and level, accurately fitted, free from distortion or defects.
  - 4. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
  - 5. Field weld components indicated.
  - 6. Perform field welding in accordance with AWS D1.1/D1.1M.
  - 7. Obtain approval prior to site cutting or making adjustments not scheduled.
  - 8. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.
- C. Cables and Fittings: Install in accordance with delegated design documents and manufacturer's instructions.
- D. Fabric/ netting: Install in accordance with delegated design documents and manufacturer's instructions.

### 3.4 INSTALLATION TOLERANCES

- A. Maximum Variation From Plumb: 1/2 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/2 inch.
- C. Maximum Out-of-Position: 1/2 inch.

### 3.5 FIELD QUALITY CONTROL

### 3.6 PROTECTION

- A. Protect installed work as required by the manufacturer to maintain product performance, design criteria and warranty.

END OF SECTION



## SECTION 133133

### TENSIONED FABRIC STRUCTURES

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

- A. Delegated design of tensioned fabric structures.
- B. Structure supporting tensioned fabric.
- C. Cables and fittings.
- D. Tensioned fabric.

##### 1.2 RELATED REQUIREMENTS

- A. 051200 - Structural Steel Framing; for structural steel of structure support tensioned fabric.

##### 1.3 SUBMITTALS

- A. Qualification Data: For Installer, fabricator and design engineer.
- B. Delegated-Design Submittal: For assemblies indicated to comply with performance requirements and design criteria, including analysis data and drawings signed and sealed by the qualified professional engineer responsible for their preparation including:
  - 1. Plans, elevations, sections, mounting heights, and frame assembly details
  - 2. Frame member sizes and required wall thicknesses.
  - 3. Welding requirements.
  - 4. Details of bolted and pin connections for frame assembly.
  - 5. Required sizes of bolts, pins, plates and tubing.
  - 6. Verify the fabric meets minimum engineering requirements.
  - 7. Details fabric attachment methods and identify thickness of all membrane plates, clamps and other attachment components.
  - 8. Cable sizes and pretension requirements.
  - 9. Anchor-bolt plans before foundation work begins. Include location, diameter, and projection of anchor bolts required to attach the tensioned fabric structures to foundation. Indicate column reactions at each location.
- C. Product Data: Provide product criteria, characteristics, accessories, jointing and seaming methods, and termination conditions.
- D. Shop Drawings:
  - 1. Include plans, elevations, sections, mounting heights, and frame assembly details.
  - 2. Preliminary member sizes with wall thickness.
  - 3. Show intended fabric attachment hardware and details.
  - 4. Identify direction, details and locations of fabric seams.

5. Show details of fabric dimensions including length of spans, sag curvature and actual shaded area.
- E. Samples (Provide one set of samples to Hurst-Rosche, and one set of samples to owner):
1. Tensioned Fabric: 8.5-inch x 11 inch samples of tensioned fabric for appearance, color, texture, finish and light transmittance.
  2. Structure Finish: Manufacturer's standard sample size on metal for color, texture and gloss.
  3. Accessories: One of each exposed accessory in selected color and finish.
- F. Manufacturer's Installation Instructions: Indicate special preparation of substrate, attachment methods, and perimeter conditions requiring special attention.
- G. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.
- H. Maintenance Data: For tensioned fabric structures including:
1. Methods for maintaining tensioned fabric structure fabrics and finishes.
  2. Precautions about cleaning materials and methods that could be detrimental to fabrics, finishes, and performance.
- 1.4 QUALITY ASSURANCE
- A. Fabric Manufacturer's Qualifications: Company specializing in manufacturing the products specified in this section with minimum 5 years of documented experience in tensioned fabric manufacture.
- B. Designer Qualifications: Professional Structural Engineer with 5 years of documented experience in design of this work and licensed in the location of the project.
- C. Fabricator/Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years experience on projects of similar size, complexity and fabric.
- 1.5 DELIVERY, STORAGE, AND HANDLING
- A. As required by the manufacturer for a warrantable installation of the installed products to meet the Performance and Design Criteria.
- 1.6 WARRANTY
- A. Fabric Manufacturer Warranty: Provide manufacturer's standard 10 year limited warranty.

## PART 2 - PRODUCTS

### 2.1 FABRICATORS/INSTALLERS

- A. Design is based on tensioned fabric structures being designed, engineered, fabricated and installed by one of the following qualified fabricator/installers.
1. Baseline Sports Construction LLC, Knoxville, TN.

2. Mahaffey Fabric Structures, Nashville, TN.
3. Fabritecture LLC, Las Vegas, NV.
4. Signature Structures LLC, Bethlehem, PA.
5. Eide Industries Inc, Cerritos, CA.
6. Structurflex, Kansas City, MO.
7. Fabritec, Dallas, TX.
8. Birdair, Amherst, NY.

- B. Substitutions for fabricators/installers other than those listed above: See Section 012513 – Product Substitution Procedures.
1. Include qualification data indicating 10 projects of similar scope and complexity with same type of structure supporting tension fabric and tensioned fabric as specified.

## 2.2 FABRIC MANUFACTURERS

- A. Specification is based on Ferrari 502, and 702.
1. Substitutions for products by manufacturers other than those listed above: See Section 012513 – Product Substitution Procedures..
    - a. Include side by side comparison of performance, design criteria and features listed for both specified product and proposed substitution.
    - b. Include full set of product data and samples for both specified product and proposed substitution.

## 2.3 DESCRIPTION

- A. Engineering, fabrication and installation of tensioned fabric, structure supporting tensioned fabric, and all associated cables, fittings and accessories.

## 2.4 PERFORMANCE AND DESIGN CRITERIA

- A. General: Design tensioned fabric structure that complies with project specific codes indicated on drawings.
- B. Design structure supporting the tensioned fabric to be self-supporting and not rely on fabric for structural stability.
- C. Design the precise interface geometry, determination, reaction loads imposed on structural steel framing, anchoring loads, connection details, interfaces and seam layouts.
- D. Include large deflection numerical shape generation that will insure a stable, uniformly stressed, three dimensionally curved shape that is in static equilibrium with the internal pre-stress forces and is suitable to resist all applied loads.
- E. Use large deflection finite element method structural analysis of the membrane system under all applicable wind and seismic loads.
- F. Design connections including bolt, weld and ancillary member sizing.

- G. Consult biaxial fabric test specification; include interpretation and fabric compensation determination.
- H. Include accurate generation of the two dimensional compensated fabric templates required to generate the three dimensional equilibrium shape.
- I. Design tensioned fabric structure:
  - 1. To withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7 including but not limited to live load, dead load, snow load, seismic loads, and wind loads.
  - 2. In accordance with fabric manufacturer's requirements for warranted installation.
  - 3. To allow for thermal movements from ambient and surface temperature changes of 120 deg F, ambient; 180 deg F, material surfaces.
  - 4. To limit corrosion and prevent galvanic action by isolating metals and other materials from direct contact with incompatible materials.
  - 5. To provide criteria on which the design is based:
    - a. Expected Fabric Life: 25 years.
- J. Solar Reflectance Index (SRI): minimum values dictated by basis of design fabric, calculated in accordance with ASTM E1980, Approach II.

## 2.5 MATERIALS

- A. Structure Supporting Tensioned Fabric:
  - 1. General: Provide structural components and accessories in accordance with fabricator/installers standard practice unless specified otherwise. Provide shapes and profiles indicated.
  - 2. Design structure with steel, stainless steel or aluminum in accordance with delegated design of tensioned fabric structure.
  - 3. Features:
    - a. Profile: As indicated in drawings.
    - b. Final Finish Color: To be selected by Architect from manufacturer's full range.
    - c. Finish:
      - 1) Fabricator/Installers standard finish.
      - 2) Fabricator/Installers corrosive environment finish.
      - 3) Fabricator/Installers hot dipped galvanized finish.
- B. Cables and Fittings:
  - 1. Fittings:
    - a. Stainless Steel Fittings: Basis of Design Product: Structural Cable components by Ronstan or PFEIFER Wire Rope & Lifting. Comparable and substituted products will be judged based on the specified performance and design criteria, features, and warranty.
      - 1) Performance Criteria:
        - a) Connectors of types indicated or required, fabricated from stainless steel, and with capability to sustain, without failure, a load equal to minimum breaking strength of cable with which they are used.
        - b) Material: 316 Grade Stainless Steel and Chrome-plated Bronze threaded turnbuckle fittings to prevent galling.

- 2) Features:
  - a) Swage attachment to cables
  - b) Aesthetic of finish.
  - c) Long term adjustability.
  - d) Long term rust resistance.
- b. Galvanized Steel Fittings: Basis of Design Product: Wire Rope and end fittings by The Crosby Group or PFEIFER Wire Rope & Lifting. Comparable and substituted products will be judged based on the specified performance and design criteria, features, and warranty.
  - 1) Performance Criteria:
    - a) Connectors of types indicated or required, fabricated from hot dip galvanized steel, and with capability to sustain, without failure, a load equal to minimum breaking strength of cable with which they are used.
  - 2) Features:
    - a) Industrial Finish.
    - b) Long term rust reduction.
- 2. Structural Cable:
  - a. Stainless Steel Strand: Complying with ASTM A 368; strand configuration, diameter, cable constructions and minimum breaking load to be selected by delegated design engineer.
  - b. Galvanized Wire Rope: Complying with ASTM A 603; strand configuration, diameter, cable constructions and minimum breaking load to be selected by delegated design engineer.
- C. Tensioned Fabric:
  - 1. Basis of Design Product: Ferrari 502, and 702. Comparable and substituted products will be judged based on the specified performance and design criteria, features, warranty, and qualifications.
    - a. Performance Criteria:
      - 1) Fire-Test-Response Characteristics: Flame-Resistance Ratings: Passes NFPA 701.
      - 2) Surface Burning Characteristics: Class A; Flame Spread Index of 25, maximum; Smoke Developed Index of 450, maximum; when whole system is tested in accordance with ASTM E84.
      - 3) Tenara 4T40HF Light Transmission per ASTM D 1003:
        - a) Degree of Transmission: 38%.
        - b) Degree of Reflection: 59%.
        - c) Degree of Absorption: 3%.
      - 4) Tenara 4T20HF Light Transmission per ASTM D 1003:
        - a) Degree of Transmission: 19%.
        - b) Degree of Reflection: 78%.
        - c) Degree of Absorption: 3%.
      - 5) Maximum Tensile Strength per ASTM D4851:
        - a) Warp: 456 pounds per inch
        - b) Weft: 456 pounds per inch.
    - b. Features:
      - 1) Product Contents: PVC Free.

- 2) Tenara fabrics are a flexible and pliable ePTFE scrim with a fluoropolymer (PTFE) coating to increase performance.
- 3) Fabric Material: ePTFE (e polytetrafluorethylene).
- 4) Coating Material: 100% Fluoropolymer.
- 5) Thickness: 0.002 Inch
- 6) Weight: 31.9 oz/square yard.
- 7) UV-resistant and colorfast.
- 8) Plasticizer Free.
- 9) Dirt and Water Repellent.
- 10) Color: Bright white at time of installation.
- 11) Manufactured in the United States

## 2.6 ACCESSORIES

- A. All accessory materials required by the manufacturer for a warrantable installation of the installed products in a manner that meets the Performance and Design Criteria.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify existing conditions meet the manufacturer's requirements before starting work.

### 3.2 PREPARATION

- A. Prepare surfaces to receive work in accordance with manufacturer's instructions.

### 3.3 INSTALLATION

- A. General: Install all materials in accordance with manufacturer's instructions based on conditions present.
- B. Structure Supporting Tensioned Fabric:
  1. Clean and strip primed steel items to bare metal where site welding is required.
  2. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.
  3. Install items plumb and level, accurately fitted, free from distortion or defects.
  4. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
  5. Field weld components indicated.
  6. Perform field welding in accordance with AWS D1.1/D1.1M.
  7. Obtain approval prior to site cutting or making adjustments not scheduled.
  8. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.
- C. Cables and Fittings: Install in accordance with delegated design documents and manufacturer's instructions.



- D. Tensioned Fabric: Install in accordance with delegated design documents and manufacturer's instructions.

#### 3.4 INSTALLATION TOLERANCES

- A. Maximum Variation From Plumb: 1/2 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/2 inch.
- C. Maximum Out-of-Position: 1/2 inch.

#### 3.5 PROTECTION

- A. Protect installed work as required by the manufacturer to maintain product performance, design criteria and warranty.

END OF SECTION



## SECTION 23 34 00

### HVAC FANS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Large Industrial Grade Fans
  - 2. Fan Controller
- B. Related Sections:
  - 1. Section 05 12 00 – Structural Steel Framing
  - 2. Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables
  - 3. Section 26 05 33 – Raceways and boxes for electrical systems

##### 1.2 REFERENCES

- A. American Bearing Manufacturers Association:
  - 1. ABMA 9 - Load Ratings and Fatigue Life for Ball Bearings.
  - 2. ABMA 11 - Load Ratings and Fatigue Life for Roller Bearings.
- B. Air Movement and Control Association International, Inc.:
  - 1. AMCA 99 - Standards Handbook.
  - 2. AMCA 204 - Balance Quality and Vibration Levels for Fans.
  - 3. AMCA 210 - Laboratory Methods of Testing Fans for Aerodynamic Performance Rating.
  - 4. AMCA 300 - Reverberant Room Method for Sound Testing of Fans.
  - 5. AMCA 301 - Methods for Calculating Fan Sound Ratings from Laboratory Test Data.
- C. National Electrical Manufacturers Association:
  - 1. NEMA MG 1 - Motors and Generators.
  - 2. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

##### 1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Indicate size, color, and configuration of fan assembly, mountings, weights, ductwork and accessory connections.
- C. Product Data: Submit data on each type of fan and include accessories, fan curves with specified operating point plotted, power, RPM, sound power levels for both fan inlet and outlet at rated capacity, electrical characteristics and connection requirements.
- D. Manufacturer's Installation Instructions: Submit fan manufacturers instructions.
- E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

#### 1.4 CLOSEOUT SUBMITTALS

- A. Section 01 77 70 - Execution and Closeout Requirements: Closeout procedures.
- B. Operation and Maintenance Data: Submit instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams.

#### 1.5 QUALITY ASSURANCE

- A. Performance Ratings: Conform to AMCA 210.
- B. Sound Ratings: AMCA 301, tested to AMCA 300.
- C. Balance Quality: Conform to AMCA 204.

#### 1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years experience and/or approved by manufacturer.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Protect motors, shafts, and bearings from weather and construction dust.

#### 1.8 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

#### 1.9 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish fifteen year manufacturer's warranty for fans.

#### 1.10 EXTRA MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Spare parts and maintenance products.

### PART 2 PRODUCTS

#### 2.1 20' INDUSTRIAL HIGH-VELOCITY LOW-SPEED FANS

- A. Basis of design:

1. Big Ass Fans Model: Basic 6
  2. Equal to be approved by Hurst-Rosche.
  3. Substitutions : Section 01 25 13 – Product Substitution Procedures
- B. Fan Unit: 20’, 6 airfoils.
- C. Motor: 2.0 HP
- D. Electrical Characteristics and Components:
1. Electrical Characteristics: In accordance with Section 26 05 03 and as scheduled on Drawings.
  2. Controls Basis of design: controller with variable speed selector
- 2.2 EXAMINATION
- A. Section 01 41 15 – Codes Regulatory Requirements.
- 2.3 PREPARATION
- A. Connection of new fan to existing structure to be designed and sealed by a licensed structural engineer. Licensed structural engineer to ensure existing structure is capable of supporting all loads associated with the installation of the new fan.
- 2.4 INSTALLATION
- A. Install in accordance with requirements from licensed structural engineer.
- 2.5 CLEANING
- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for cleaning.
- 2.6 DEMONSTRATION
- A. Section 01 79 25 – Demonstration and Training
- B. Demonstrate fan operation and maintenance procedures.
- 2.7 PROTECTION OF FINISHED WORK
- A. Section 01 77 70 – Closeout Procedures
- 2.8 SCHEDULES
- A. See drawings for all schedules.

END OF SECTION



## SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:
  - 1. Copper building wire rated 600 V or less.
  - 2. Connectors, splices, and terminations rated 600 V and less.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Product Schedule: Indicate type, use, location, and termination locations.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer's authorized service representative.
- B. Field quality-control reports.

#### 1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Member company of NETA.

### PART 2 - PRODUCTS

#### 2.1 COPPER BUILDING WIRE

- A. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.
- B. Standards:
  - 1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

2. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."
- C. Conductors: Copper, complying with ASTM B 3 for bare annealed copper and with ASTM B 8 for stranded conductors.
- D. Conductor Insulation:
  1. Type THHN and Type THWN-2: Comply with UL 83.

## 2.2 CONNECTORS AND SPLICES

- A. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

## PART 3 - EXECUTION

### 3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

### 3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Exposed Branch Circuits: Type THHN/THWN-2, single conductors in raceway.

### 3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Complete raceway installation between conductor and cable termination points according to Section 260533 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.



### 3.4 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- B. Make splices, terminations, and taps that are compatible with conductor material.

### 3.5 IDENTIFICATION

- A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."
- B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

### 3.6 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
  - 1. After installing conductors and cables and before electrical circuitry has been energized, test conductors for compliance with requirements.
  - 2. Perform each of the following visual and electrical tests:
    - a. Inspect exposed sections of conductor and cable for physical damage and correct connection according to the single-line diagram.
    - b. Test bolted connections for high resistance using one of the following:
      - 1) A low-resistance ohmmeter.
      - 2) Calibrated torque wrench.
      - 3) Thermographic survey.
    - c. Inspect compression-applied connectors for correct cable match and indentation.
    - d. Inspect for correct identification.
    - e. Inspect cable jacket and condition.
    - f. Insulation-resistance test on each conductor for ground and adjacent conductors. Apply a potential of 500-V dc for 300-V rated cable and 1000-V dc for 600-V rated cable for a one-minute duration.
    - g. Continuity test on each conductor and cable.
    - h. Uniform resistance of parallel conductors.
- B. Cables will be considered defective if they do not pass tests and inspections.
- C. Prepare test and inspection reports to record the following:
  - 1. Procedures used.
  - 2. Results that comply with requirements.
  - 3. Results that do not comply with requirements, and corrective action taken to achieve compliance with requirements.

END OF SECTION

## SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes grounding and bonding systems and equipment.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For grounding to include in operation and maintenance manuals.

#### 1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Certified by NETA.

### PART 2 - PRODUCTS

#### 2.1 SYSTEM DESCRIPTION

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

## 2.2 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
  - 1. Solid Conductors: ASTM B 3.
  - 2. Stranded Conductors: ASTM B 8.

## 2.3 CONNECTORS

- A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
- B. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
- C. Bus-Bar Connectors: Mechanical type, cast silicon bronze, solderless compression -type wire terminals, and long-barrel, two-bolt connection to ground bus bar.
- D. Cable-to-Cable Connectors: Compression type, copper or copper alloy.
- E. Conduit Hubs: Mechanical type, terminal with threaded hub.
- F. Straps: Solid copper, copper lugs. Rated for 600 A.

## PART 3 - EXECUTION

### 3.1 APPLICATIONS

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.
- B. Conductor Terminations and Connections:
  - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
  - 2. Connections to Structural Steel: Welded connectors.

### 3.2 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with all branch circuits.

### 3.3 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
  - 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.

### 3.4 FIELD QUALITY CONTROL

- A. Perform tests and inspections:
  - 1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
  - 2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
- B. Grounding system will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.
- D. Report measured ground resistances that exceed the following values:
  - 1. Power Equipment or System with Capacity of 500 kVA and Less: 10 ohms.
- E. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

END OF SECTION



## SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:
  - 1. Metal conduits, tubing, and fittings.
  - 2. Nonmetal conduits, tubing, and fittings.
  - 3. Boxes, enclosures, and cabinets.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- B. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, and attachment details.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of items involved:
  - 1. Structural members in paths of conduit groups with common supports.
  - 2. HVAC items and architectural features in paths of conduit groups with common supports.
- B. Seismic Qualification Certificates: For enclosures, cabinets, and conduit racks and their mounting provisions, including those for internal components, from manufacturer.

### PART 2 - PRODUCTS

#### 2.1 METAL CONDUITS, TUBING, AND FITTINGS

- A. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. GRC: Comply with ANSI C80.1 and UL 6.

- C. IMC: Comply with ANSI C80.6 and UL 1242.
- D. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.
- E. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.
- F. Joint Compound for IMC or GRC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

## 2.2 NONMETALLIC CONDUITS AND FITTINGS

- A. Listing and Labeling: Nonmetallic conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

## 2.3 BOXES, ENCLOSURES, AND CABINETS

- A. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.
- B. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.
- C. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, aluminum, Type FD, with gasketed cover.
- D. Paddle Fan Outlet Boxes: Nonadjustable, designed for attachment of paddle fan weighing 250 lb.
  - 1. Listing and Labeling: Paddle fan outlet boxes shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- E. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- F. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, cast aluminum with gasketed cover.
- G. Device Box Dimensions: 4 inches square.
- H. Gangable boxes are prohibited.
- I. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, Type 3R with continuous-hinge cover with flush latch unless otherwise indicated.
  - 1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
  - 2. Nonmetallic Enclosures: Fiberglass.
  - 3. Interior Panels: Steel; all sides finished with manufacturer's standard enamel.



## PART 3 - EXECUTION

### 3.1 RACEWAY APPLICATION

- A. Indoors: Apply raceway products as specified below unless otherwise indicated:
  - 1. Exposed, Not Subject to Physical Damage: GRC or IMC.
  - 2. Exposed, Not Subject to Severe Physical Damage: GRC or IMC.
  - 3. Exposed and Subject to Severe Physical Damage: GRC or IMC.
  - 4. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4X stainless steel in damp or wet locations.
- B. Minimum Raceway Size: 3/4-inch trade size.
- C. Raceway Fittings: Compatible with raceways and suitable for use and location.
  - 1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
  - 2. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.
- D. Install nonferrous conduit or tubing for circuits operating above 60 Hz. Where aluminum raceways are installed for such circuits and pass through concrete, install in nonmetallic sleeve.
- E. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.
- F. Install surface raceways only where indicated on Drawings.
- G. Do not install nonmetallic conduit where ambient temperature exceeds 120 deg F.

### 3.2 INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.
- B. Complete raceway installation before starting conductor installation.
- C. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches of changes in direction.
- D. Install conduits parallel or perpendicular to building lines.
- E. Support conduit within 12 inches of enclosures to which attached.
- F. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

- G. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.
- H. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch trade size and insulated throat metal bushings on 1-1/2-inch trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.
- I. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.
- J. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.
- K. Cut conduit perpendicular to the length. For conduits 2-inch trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.
- L. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire.
- M. Surface Raceways:
  - 1. Install surface raceway with a minimum 2-inch radius control at bend points.
  - 2. Secure surface raceway with screws or other anchor-type devices at intervals not exceeding 48 inches and with no less than two supports per straight raceway section. Support surface raceway according to manufacturer's written instructions. Tape and glue are not acceptable support methods.
- N. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings according to NFPA 70.
- O. Install devices to seal raceway interiors at accessible locations.
- P. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 72 inches of flexible conduit for equipment subject to vibration, noise transmission, or movement and motors.
  - 1. Use LFMC in damp or wet locations subject to severe physical damage.
  - 2. Use LFMC in damp or wet locations not subject to severe physical damage.
- Q. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.
- R. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.
- S. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

### 3.3 PROTECTION

- A. Protect coatings, finishes, and cabinets from damage and deterioration.
  - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
  - 2. Repair damage to paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION



## SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:
  - 1. Color and legend requirements for raceways, conductors, labels and signs.
  - 2. Labels.
  - 3. Signs.
  - 4. Fasteners for labels and signs.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for electrical identification products.
- B. Identification Schedule: For each piece of electrical equipment and electrical system components to be an index of nomenclature for electrical equipment and system components used in identification signs and labels. Use same designations indicated on Drawings.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Comply with ASME A13.1.
- B. Comply with NFPA 70.
- C. Comply with ANSI Z535.4 for safety signs and labels.
- D. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.
- E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

## 2.2 COLOR AND LEGEND REQUIREMENTS

### A. Raceways and Cables Carrying Circuits at 600 V or Less:

1. Black letters on an orange field.
2. Legend: Indicate voltage and system.

### B. Color-Coding for Phase-Identification, 600 V or Less: Use colors listed below for ungrounded branch-circuit conductors.

1. Color shall be factory applied or field applied for sizes larger than No. 8 AWG if authorities having jurisdiction permit.
2. Colors for 208/120-V Circuits:
  - a. Phase A: Black.
  - b. Phase B: Red.
  - c. Phase C: Blue.
3. Color for Neutral: White.
4. Color for Equipment Grounds: Green.

### C. Equipment Identification Labels:

1. Black letters on a white field.

## 2.3 LABELS

### A. Vinyl Wraparound Labels: Preprinted, flexible labels laminated with a clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing label ends.

### B. Snap-around Labels: Slit, pre-tensioned, flexible, preprinted, color-coded acrylic sleeves, with diameters sized to suit diameters and that stay in place by gripping action.

### C. Self-Adhesive Wraparound Labels: 3-mil- thick, flexible label with acrylic pressure-sensitive adhesive.

1. Self-Lamination: Clear; UV-, weather- and chemical-resistant; self-laminating, protective shield over the legend. Labels sized such that the clear shield overlaps the entire printed legend.
2. Marker for Labels: Permanent, waterproof, black ink marker recommended by tag manufacturer.
- 3.

### D. Self-Adhesive Labels: Thermal, transfer-printed, 3-mil-thick, multicolor, weather- and UV-resistant, pressure-sensitive adhesive labels, configured for intended use and location.

## 2.4 SIGNS

### A. Laminated Acrylic or Melamine Plastic Signs:

1. Thickness:
  - a. For signs up to 20 sq. in., minimum 1/16 inch thick.
  - b. For signs larger than 20 sq. in., 1/8 inch thick.
  - c. Engraved legend with white letters on a dark gray background.
  - d. Punched or drilled for mechanical fasteners with 1/4-inch grommets in corners for mounting.

## 2.5 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Retain paint system applicable for surface material and location (exterior or interior).
- B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Self-Adhesive Identification Products: Before applying electrical identification products, clean substrates of substances that could impair bond, using materials and methods recommended by manufacturer of identification product.

### 3.2 INSTALLATION

- A. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.
- B. Verify identity of each item before installing identification products.
- C. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and operation and maintenance manual.
- D. Apply identification devices to surfaces that require finish after completing finish work.
- E. Install signs with approved legend to facilitate proper identification, operation, and maintenance of electrical systems and connected items.
- F. System Identification for Raceways and Cables under 600 V: Identification shall completely encircle cable or conduit. Place identification of two-color markings in contact, side by side.

1. Secure tight to surface of conductor, cable, or raceway.
- G. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
- H. Elevated Components: Increase sizes of labels, signs, and letters to those appropriate for viewing from the floor.
- I. Vinyl Wraparound Labels:
1. Secure tight to surface of raceway or cable at a location with high visibility and accessibility.
  2. Attach labels that are not self-adhesive type with clear vinyl tape, with adhesive appropriate to the location and substrate.
- J. Self-Adhesive Labels:
1. On each item, install unique designation label that is consistent with wiring diagrams, schedules, and operation and maintenance manual.
  2. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on 1-1/2-inch-high label; where two lines of text are required, use labels 2 inches high.
- K. Marker Tapes: Secure tight to surface at a location with high visibility and accessibility.
- L. Self-Adhesive Vinyl Tape: Secure tight to surface at a location with high visibility and accessibility.
1. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding.
- M. Laminated Acrylic or Melamine Plastic Signs:
1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
  2. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on 1-1/2-inch-high sign; where two lines of text are required, use labels 2 inches high.

### 3.3 IDENTIFICATION SCHEDULE

- A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.
- B. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations of high visibility. Identify by system and circuit designation.
- C. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Branch Circuits, More Than 30 A and 120 V to Ground: Identify with self-adhesive raceway labels.



- D. Control-Circuit Conductor Identification: For conductors and cables in pull and junction boxes use self-adhesive labels with the conductor or cable designation, origin, and destination.
- E. Control-Circuit Conductor Termination Identification: For identification at terminations, provide self-adhesive labels with the conductor designation.
- F. Instructional Signs: Self-adhesive labels, including the color code for grounded and ungrounded conductors.
- G. Equipment Identification Labels:
  - 1. Indoor Equipment: Laminated acrylic or melamine plastic sign.
    - a. Motor-control centers.
    - b. Enclosed switches.
    - c. Enclosed circuit breakers.
    - d. Enclosed controllers.
    - e. Variable-speed controllers.
    - f. Remote-controlled switches, dimmer modules, and control devices.

END OF SECTION 260553

