

# PROJECT MANUAL

## BUILDING ADDITION AND REMODEL FOR MT. CARMEL CITY HALL 631 N. MARKET ST. MT. CARMEL, IL 62863

by



ARCHITECTURE & DESIGN GROUP, LTD.  
512 MARKET (618)263-3254 MT.CARMEL,IL 62863



Signature:

Date:

Expires:

*Jason M. Wright AIA*

02/28/20

11/30/20

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**ADG/ARCHITECTURE & DESIGN GROUP**  
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**MT. CARMEL, IL 62863**  
**618-263-3254**

**PROJECT MANUAL FOR**

**BUILDING ADDITION AND REMODEL**  
**MT. CARMEL CITY HALL**  
**MT. CARMEL, IL 62863**

Date: 02/28/20

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END                                      00 01 15-1

DIVISION 00 - PROCUREMENT & CONTRACTING REQUIREMENTS  
**Section 00 11 13 Notice to Bidders**

TIME AND PLACE OF BIDS

Notice is hereby given that sealed bids for the Mt. Carmel City Hall Addition/Remodel, Mt. Carmel, IL, shall be received at the City Hall, 631 N. Market St., Mt. Carmel, IL, until **3:00 PM local time, on Thursday, April 2, 2020** and then publicly opened. The Owner reserves the right to accept or reject any bid or waive informality or errors in bidding, to award the contract to his interests, and to hold the bids for a period of sixty (60) days from the bid date.

PRE-BID CONFERENCE

A pre-bid conference will be held at 3:00 PM local time on Thursday, March 26, 2020 at the City Hall. While attendance is not mandatory, all bidders are encouraged to attend.

METHOD OF BIDDING

Lump Sum Bids will be received for the following:  
CONTRACT #1: Complete Construction.

PREPARATION OF BIDS

Bids shall be submitted on the attached Bid Proposal Form, executed in accordance with attached forms, and delivered in a sealed opaque envelope showing the bidders' name and address and the name of the project. Faxed or electronically submitted Bids not NOT be accepted.

PERFORMANCE BOND

Contractors receiving award shall be required to furnish an approved Performance Bond, Labor and Material Payment Bond for one hundred percent (100%) of the Contract amount which shall be in full force and effect for twelve (12) months from date of acceptance of the work. Bonds shall be furnished within ten (10) days after written notice to proceed with the work.

BIDDING DOCUMENTS

Prime Bidders may obtain bidding documents from **ADG/Architecture and Design Group, P.O. Box 335, 512 Market Street, Mt. Carmel, Illinois 62863, 618 263 3254**. Electronic PDF copies of the bidding documents may be transmitted via email at no charge. Up to two hard copy sets may be purchased for \$50.00 per set, per bidder, non-refundable. Sets must be purchased in total; individual drawing sheets or specification sections will not be distributed.

Bidding documents are also available for review at the following locations:

OFFICE OF THE OWNER  
City of Mt. Carmel  
631 N. Market St.  
Mt. Carmel, IL 62863

CONSTRUCT CONNECT  
30 Technology Parkway South, Suite 500  
Norcross, GA 30092

SOUTHERN ILLINOIS BUILDERS ASSOCIATION  
1519 E. DeYoung Street, Suite B  
Marion, IL 62959  
or  
1468 Green Mount Road  
O'Fallon, IL 62269

SECTION 00 11 13-2

BID SECURITY

A certified check or bank draft, payable to the City of Mount Carmel, or a satisfactory bid bond executed by the bidder and acceptable sureties in an amount equal to five percent (5%) of the bid shall be submitted with each bid. Should the bidder withdraw his bid within ten (10) days after bid date without written consent of the Owner, or fail to execute a satisfactory contract including performance bond within thirty (30) days after the written notice to proceed, the Owner may declare the bid deposit forfeited as liquidated damages.

SALES TAX

Retailers Occupational Sales Taxes are not applicable for this project.

END

00 11 13-2

DIVISION 00 - PROCUREMENT & CONTRACTING REQUIREMENTS  
**Section 00 21 13 - Instructions to Bidders**

INSTRUCTION TO BIDDERS: AIA Document A701, Instruction to Bidders, 2018 Edition, Articles 1 through 8 inclusive, is consecutively attached in this Project Manual and is a part of the contract.

END

00 21 13-1





# AIA<sup>®</sup> Document A701<sup>™</sup> – 2018

## Instructions to Bidders

for the following Project:

*(Name, location, and detailed description)*

Building Addition and Remodel for Mount Carmel City Hall

631 N. Market St.

Mount Carmel, IL 62863

Construction of a new one story council room addition with toilets on a concrete slab with masonry exterior walls (base bid), wood stud walls and a wood truss roof.

### THE OWNER:

*(Name, legal status, address, and other information)*

City of Mount Carmel

631 N. Market St.

Mount Carmel, IL 62863

Telephone Number: 618 262 4822

Fax Number: 618 262 4208

### THE ARCHITECT:

*(Name, legal status, address, and other information)*

ADG/Architecture and Design Group, Ltd.

512 N. Market St.

P.O. Box 335

Mount Carmel, IL 62863

Telephone Number: 618 263 3254

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

FEDERAL, STATE, AND LOCAL LAWS MAY IMPOSE REQUIREMENTS ON PUBLIC PROCUREMENT CONTRACTS. CONSULT LOCAL AUTHORITIES OR AN ATTORNEY TO VERIFY REQUIREMENTS APPLICABLE TO THIS PROCUREMENT BEFORE COMPLETING THIS FORM.

It is intended that AIA Document G612<sup>™</sup>–2017, Owner's Instructions to the Architect, Parts A and B will be completed prior to using this document.

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## ARTICLE 1 DEFINITIONS

§ 1.1 Bidding Documents include the Bidding Requirements and the Proposed Contract Documents. The Bidding Requirements consist of the advertisement or invitation to bid, Instructions to Bidders, supplementary instructions to bidders, the bid form, and any other bidding forms. The Proposed Contract Documents consist of the unexecuted form of Agreement between the Owner and Contractor and that Agreement's Exhibits, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, all Addenda, and all other documents enumerated in Article 8 of these Instructions.

§ 1.2 Definitions set forth in the General Conditions of the Contract for Construction, or in other Proposed Contract Documents apply to the Bidding Documents.

§ 1.3 Addenda are written or graphic instruments issued by the Architect, which, by additions, deletions, clarifications, or corrections, modify or interpret the Bidding Documents.

§ 1.4 A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

§ 1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents, to which Work may be added or deleted by sums stated in Alternate Bids.

§ 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from, or that does not change, the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

§ 1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, as described in the Bidding Documents.

§ 1.8 A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.

§ 1.9 A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment, or labor for a portion of the Work.

## ARTICLE 2 BIDDER'S REPRESENTATIONS

§ 2.1 By submitting a Bid, the Bidder represents that:

- .1 the Bidder has read and understands the Bidding Documents;
- .2 the Bidder understands how the Bidding Documents relate to other portions of the Project, if any, being bid concurrently or presently under construction;
- .3 the Bid complies with the Bidding Documents;
- .4 the Bidder has visited the site, become familiar with local conditions under which the Work is to be performed, and has correlated the Bidder's observations with the requirements of the Proposed Contract Documents;
- .5 the Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception; and
- .6 the Bidder has read and understands the provisions for liquidated damages, if any, set forth in the form of Agreement between the Owner and Contractor.

## ARTICLE 3 BIDDING DOCUMENTS

### § 3.1 Distribution

§ 3.1.1 Bidders shall obtain complete Bidding Documents, as indicated below, from the issuing office designated in the advertisement or invitation to bid, for the deposit sum, if any, stated therein.

*(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall obtain Bidding Documents.)*

Electronic via email; paper copy

§ 3.1.2 Any required deposit shall be refunded to Bidders who submit a bona fide Bid and return the paper Bidding Documents in good condition within ten days after receipt of Bids. The cost to replace missing or damaged paper documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the paper Bidding Documents, and the Bidder's deposit will be refunded.

§ 3.1.3 Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the advertisement or invitation to bid, or in supplementary instructions to bidders.

§ 3.1.4 Bidders shall use complete Bidding Documents in preparing Bids. Neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete Bidding Documents.

§ 3.1.5 The Bidding Documents will be available for the sole purpose of obtaining Bids on the Work. No license or grant of use is conferred by distribution of the Bidding Documents.

### § 3.2 Modification or Interpretation of Bidding Documents

§ 3.2.1 The Bidder shall carefully study the Bidding Documents, shall examine the site and local conditions, and shall notify the Architect of errors, inconsistencies, or ambiguities discovered and request clarification or interpretation pursuant to Section 3.2.2.

§ 3.2.2 Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder in writing and shall be received by the Architect at least seven days prior to the date for receipt of Bids.

*(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall submit requests for clarification and interpretation.)*

#### Email

§ 3.2.3 Modifications and interpretations of the Bidding Documents shall be made by Addendum. Modifications and interpretations of the Bidding Documents made in any other manner shall not be binding, and Bidders shall not rely upon them.

### § 3.3 Substitutions

§ 3.3.1 The materials, products, and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitution.

#### § 3.3.2 Substitution Process

§ 3.3.2.1 Written requests for substitutions shall be received by the Architect at least ten days prior to the date for receipt of Bids. Requests shall be submitted in the same manner as that established for submitting clarifications and interpretations in Section 3.2.2.

§ 3.3.2.2 Bidders shall submit substitution requests on a Substitution Request Form if one is provided in the Bidding Documents.

§ 3.3.2.3 If a Substitution Request Form is not provided, requests shall include (1) the name of the material or equipment specified in the Bidding Documents; (2) the reason for the requested substitution; (3) a complete description of the proposed substitution including the name of the material or equipment proposed as the substitute, performance and test data, and relevant drawings; and (4) any other information necessary for an evaluation. The request shall include a statement setting forth changes in other materials, equipment, or other portions of the Work, including changes in the work of other contracts or the impact on any Project Certifications (such as LEED), that will result from incorporation of the proposed substitution.

§ 3.3.3 The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

§ 3.3.4 If the Architect approves a proposed substitution prior to receipt of Bids, such approval shall be set forth in an Addendum. Approvals made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 3.3.5 No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

#### § 3.4 Addenda

§ 3.4.1 Addenda will be transmitted to Bidders known by the issuing office to have received complete Bidding Documents.

*(Indicate how, such as by email, website, host site/platform, paper copy, or other method Addenda will be transmitted.)*

#### Email

§ 3.4.2 Addenda will be available where Bidding Documents are on file.

§ 3.4.3 Addenda will be issued no later than four days prior to the date for receipt of Bids, except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

§ 3.4.4 Prior to submitting a Bid, each Bidder shall ascertain that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

### ARTICLE 4 BIDDING PROCEDURES

#### § 4.1 Preparation of Bids

§ 4.1.1 Bids shall be submitted on the forms included with or identified in the Bidding Documents.

§ 4.1.2 All blanks on the bid form shall be legibly executed. Paper bid forms shall be executed in a non-erasable medium.

§ 4.1.3 Sums shall be expressed in both words and numbers, unless noted otherwise on the bid form. In case of discrepancy, the amount entered in words shall govern.

§ 4.1.4 Edits to entries made on paper bid forms must be initialed by the signer of the Bid.

§ 4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change" or as required by the bid form.

§ 4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder's refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall neither make additional stipulations on the bid form nor qualify the Bid in any other manner.

§ 4.1.7 Each copy of the Bid shall state the legal name and legal status of the Bidder. As part of the documentation submitted with the Bid, the Bidder shall provide evidence of its legal authority to perform the Work in the jurisdiction where the Project is located. Each copy of the Bid shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further name the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached, certifying the agent's authority to bind the Bidder.

§ 4.1.8 A Bidder shall incur all costs associated with the preparation of its Bid.

#### § 4.2 Bid Security

§ 4.2.1 Each Bid shall be accompanied by the following bid security:

*(Insert the form and amount of bid security.)*

A certified check or bank draft, payable to City of Mount Carmel, or AIA Document A310 – 2010, five percent (5%) of the Bid amount, executed by the bidder and acceptable surety.

§ 4.2.2 The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and shall, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty. In the event the Owner fails to comply with Section 6.2, the amount of the bid security shall not be forfeited to the Owner.

§ 4.2.3 If a surety bond is required as bid security, it shall be written on AIA Document A310™, Bid Bond, unless otherwise provided in the Bidding Documents. The attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of an acceptable power of attorney. The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 4.2.4 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until (a) the Contract has been executed and bonds, if required, have been furnished; (b) the specified time has elapsed so that Bids may be withdrawn; or (c) all Bids have been rejected. However, if no Contract has been awarded or a Bidder has not been notified of the acceptance of its Bid, a Bidder may, beginning 61 days after the opening of Bids, withdraw its Bid and request the return of its bid security.

#### § 4.3 Submission of Bids

§ 4.3.1 A Bidder shall submit its Bid as indicated below:

*(Indicate how, such as by website, host site/platform, paper copy, or other method Bidders shall submit their Bid.)*

##### Paper Bid Proposal Form

§ 4.3.2 Paper copies of the Bid, the bid security, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address, and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

§ 4.3.3 Bids shall be submitted by the date and time and at the place indicated in the invitation to bid. Bids submitted after the date and time for receipt of Bids, or at an incorrect place, will not be accepted.

§ 4.3.4 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

§ 4.3.5 A Bid submitted by any method other than as provided in this Section 4.3 will not be accepted.

#### § 4.4 Modification or Withdrawal of Bid

§ 4.4.1 Prior to the date and time designated for receipt of Bids, a Bidder may submit a new Bid to replace a Bid previously submitted, or withdraw its Bid entirely, by notice to the party designated to receive the Bids. Such notice shall be received and duly recorded by the receiving party on or before the date and time set for receipt of Bids. The receiving party shall verify that replaced or withdrawn Bids are removed from the other submitted Bids and not considered. Notice of submission of a replacement Bid or withdrawal of a Bid shall be worded so as not to reveal the amount of the original Bid.

§ 4.4.2 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids in the same format as that established in Section 4.3, provided they fully conform with these Instructions to Bidders. Bid security shall be in an amount sufficient for the Bid as resubmitted.

§ 4.4.3 After the date and time designated for receipt of Bids, a Bidder who discovers that it made a clerical error in its Bid shall notify the Architect of such error within two days, or pursuant to a timeframe specified by the law of the jurisdiction where the Project is located, requesting withdrawal of its Bid. Upon providing evidence of such error to the reasonable satisfaction of the Architect, the Bid shall be withdrawn and not resubmitted. If a Bid is withdrawn pursuant to this Section 4.4.3, the bid security will be attended to as follows:

*(State the terms and conditions, such as Bid rank, for returning or retaining the bid security.)*

The Owner may declare the bid deposit forfeited as liquidated damages and the Bidder shall pay to the Owner the difference, not to exceed the amount of the bid deposit, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid.

## **ARTICLE 5 CONSIDERATION OF BIDS**

### **§ 5.1 Opening of Bids**

If stipulated in an advertisement or invitation to bid, or when otherwise required by law, Bids properly identified and received within the specified time limits will be publicly opened and read aloud. A summary of the Bids may be made available to Bidders.

### **§ 5.2 Rejection of Bids**

Unless otherwise prohibited by law, the Owner shall have the right to reject any or all Bids.

### **§ 5.3 Acceptance of Bid (Award)**

**§ 5.3.1** It is the intent of the Owner to award a Contract to the lowest responsive and responsible Bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents. Unless otherwise prohibited by law, the Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's best interests.

**§ 5.3.2** Unless otherwise prohibited by law, the Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the lowest responsive and responsible Bidder on the basis of the sum of the Base Bid and Alternates accepted.

## **ARTICLE 6 POST-BID INFORMATION**

### **§ 6.1 Contractor's Qualification Statement**

Bidders to whom award of a Contract is under consideration shall submit to the Architect, upon request and within the timeframe specified by the Architect, a properly executed AIA Document A305™, Contractor's Qualification Statement, unless such a Statement has been previously required and submitted for this Bid.

### **§ 6.2 Owner's Financial Capability**

A Bidder to whom award of a Contract is under consideration may request in writing, fourteen days prior to the expiration of the time for withdrawal of Bids, that the Owner furnish to the Bidder reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. The Owner shall then furnish such reasonable evidence to the Bidder no later than seven days prior to the expiration of the time for withdrawal of Bids. Unless such reasonable evidence is furnished within the allotted time, the Bidder will not be required to execute the Agreement between the Owner and Contractor.

### **§ 6.3 Submittals**

**§ 6.3.1** After notification of selection for the award of the Contract, the Bidder shall, as soon as practicable or as stipulated in the Bidding Documents, submit in writing to the Owner through the Architect:

- .1 a designation of the Work to be performed with the Bidder's own forces;
- .2 names of the principal products and systems proposed for the Work and the manufacturers and suppliers of each; and
- .3 names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

**§ 6.3.2** The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.

**§ 6.3.3** Prior to the execution of the Contract, the Architect will notify the Bidder if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, withdraw the Bid or submit an acceptable substitute person or entity. The Bidder may also submit any required adjustment in the Base Bid or Alternate Bid to account for the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited.

**§ 6.3.4** Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

## ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

### § 7.1 Bond Requirements

§ 7.1.1 If stipulated in the Bidding Documents, the Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder.

§ 7.1.2 If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid. If the furnishing of such bonds is required after receipt of bids and before execution of the Contract, the cost of such bonds shall be added to the Bid in determining the Contract Sum.

§ 7.1.3 The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 7.1.4 Unless otherwise indicated below, the Penal Sum of the Payment and Performance Bonds shall be the amount of the Contract Sum.

*(If Payment or Performance Bonds are to be in an amount other than 100% of the Contract Sum, indicate the dollar amount or percentage of the Contract Sum.)*

### § 7.2 Time of Delivery and Form of Bonds

§ 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than three days following the date of execution of the Contract. If the Work is to commence sooner in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section 7.2.1.

§ 7.2.2 Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond.

§ 7.2.3 The bonds shall be dated on or after the date of the Contract.

§ 7.2.4 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix to the bond a certified and current copy of the power of attorney.

## ARTICLE 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

§ 8.1 Copies of the proposed Contract Documents have been made available to the Bidder and consist of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor, unless otherwise stated below.  
*(Insert the complete AIA Document number, including year, and Document title.)*

AIA Document A105 – 2017 Standard Short Form of Agreement Between Owner and Contractor

- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds, unless otherwise stated below.  
*(Insert the complete AIA Document number, including year, and Document title.)*

N/A

- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction, unless otherwise stated below.  
*(Insert the complete AIA Document number, including year, and Document title.)*

N/A

- .4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:  
*(Insert the date of the E203-2013.)*

N/A

.5 Drawings

Number	Title	Date
<u>Section 00 01 15</u>	<u>List of Drawing Sheets</u>	<u>02/28/2020</u>

.6 Specifications

Section	Title	Date	Pages
<u>00 01 10</u>	<u>Table of Contents</u>	<u>02/28/2020</u>	<u>3</u>

.7 Addenda:

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

.8 Other Exhibits:

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

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

☐ The Sustainability Plan:

Title	Date	Pages
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☒ Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
<u>Section 00 73 00</u>	<u>Supplementary</u> <u>Conditions</u>	<u>02/28/2020</u>	<u>3</u>

.9 Other documents listed below:

*(List here any additional documents that are intended to form part of the Proposed Contract Documents.)*

Contractor's Bid Proposal  
Contractor's Performance Bond and Payment Bond  
Contractor's Certificate of Liability Insurance



DIVISION 00 - PROCUREMENT & CONTRACTING REQUIREMENTS  
**Section 00 22 13 - Supplementary Instructions to Bidders**

INSTRUCTION TO BIDDERS: AIA Document A701, Instruction to Bidders, 2018 Edition, Articles 1 through 8 inclusive, is a part of the contract.

**SUPPLEMENTS:**

The following supplements modify, change, delete from or add to the Instructions contained in AIA Document A701, Article 7 and add Article 9. Where any articles of the instructions are modified or any paragraph, subparagraph or clause thereof is modified or deleted by these supplements, the unaltered provisions of that article, paragraph, subparagraph or clause shall remain in effect.

**ARTICLE 7 - BONDS**

Add the following to paragraph:

- 7.1.1     Furnish to the Owner bonds in the amount equal to the contract price including labor, materials, utilities, transportation, supplies, equipment, machinery or rental thereof, dated the same as the contract date.

Change the following beginning sentence to:

- 7.2.1     The Bidder shall deliver the required bonds to the Owner not later than three days **prior** to the date of the execution of the Contract.

**ARTICLE 9 - RETAILER'S OCCUPATIONAL TAX**

Add the following paragraph as Article 9:

- "9.1     Retail sales tax shall not be included in the bid amount. The Owner is exempted by Section 3 of the Illinois Use Tax Act (Section 3, House Bill 1610, approved July 31, 1961. Illinois Revised Statutes 1967, Chapter 120, Section 439.3) from paying any of the taxes imposed by the Act, and sales to the Owner are exempt by Section 2 of the Illinois Retailer's Occupational Tax Act (Section 2, House Bill 1609, approved July 31, 1961, Illinois Revised Statutes 1967, Chapter 120, Section 441) from any of the taxes imposed by the Act. The Department of Revenue for the State of Illinois under Rule No. 15, issued August 9, 1961, has declared that sales of materials to construction contractors for conversion into real estate for schools, governmental bodies, agencies and instrumentalities, are not taxable sales."

DIVISION 00 - PROCUREMENT & CONTRACTING REQUIREMENTS  
**Section 00 42 00 - Bid Proposal Form**

PROJECT: MT. CARMEL CITY HALL ADDITION/REMODEL  
631 N. Market St.  
Mt. Carmel, IL 62863

TO: CITY OF MT. CARMEL  
631 N. MARKET ST.  
MT. CARMEL, IL 62863

PROPOSAL FORM:

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

Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(Hereinafter referred to as Bidder)

The Bidder, in compliance with the Notice to Bidders for the construction of the above referenced project, having examined the plans and specifications with related documents and the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all materials and labor, and to construct the project in accordance with the contract documents, within the time set forth therein, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the Contract Documents of which this proposal is a part.

Bidder acknowledges receipt of the following addenda:  
(Bidder is to insert Addendum Number.)

Addendum # \_\_\_\_\_ Addendum # \_\_\_\_\_ Addendum # \_\_\_\_\_ Addendum # \_\_\_\_\_

BID DEPOSIT

The undersigned furnishes herewith, as requested in the Instructions to Bidders, a Bid Deposit in the amount of five (5%) percent of the bid amount in the form of:

Cashier's Check \_\_\_\_\_ Bank Draft (Payable to the Owner) \_\_\_\_\_

Certified Check \_\_\_\_\_ Bid Bond (Owner as the Obligee) \_\_\_\_\_

It is understood and agreed that, should the undersigned fail to enter into a contract with the Owner or furnish acceptable contract security within the time and in the manner herein provided, the bid deposit shall be retained by the Owner as liquidated damages and not as a forfeiture. As it is impossible to determine precisely the exact amount of damages the Owner will sustain, it is agreed that the bid deposit is a fair and equitable estimate of such damages.

SECTION 00 42 00-2

BASE BID

BASE BID, COMPLETE CONSTRUCTION

\$

Bidders must show bid amount in both words and figures. In case of discrepancy, amount shown in words shall govern.

ALTERNATE BID AB-1:

DELETE CONCRETE MASONRY UNIT EXTERIOR WALL ABOVE FINISH FLOOR ELEVATION, USE 2X6 EXTERIOR STUD WALL (DELETE ADDITIONAL 2X4 INTERIOR STUD WALL AT PERIMETER)

(DEDUCT)\$

Bidders must show bid amount in both words and figures. In case of discrepancy, amount shown in words shall govern.

TIME OF COMPLETION

If notified of award of this contract within the 60-day Guarantee Period, the undersigned agrees to fully complete the work as bid herein:

Calendar Days

(Give calendar days from Notice to Proceed)

BID GUARANTEE

The undersigned agrees that the Owner shall have the right to retain this bid for a period of sixty (60) days from the date of receiving bids and guarantees the amount or amount set forth to be firm for the same sixty (60) day period.

BID ACCEPTANCE

If written notice of the acceptance of this bid is mailed, telefaxed or delivered to the undersigned within the time noted herein, after the date of the opening of bids, or at any time thereafter before this bid is withdrawn, the undersigned agrees that he will execute a construction contract (Standard Form of Agreement Between Owner and Contractor) in accordance with the Bid as accepted, and will furnish contract security in the form of Performance & Payment Bonds, valid Certificates of Insurance and with such surety or sureties as the Owner may approve. All documents shall be executed within 10 days from date of such written notice.

It is understood and agreed that the Owner reserves the right to award the contract to his interests, to reject any or all bids, and to waive any informalities in bidding.

SECTION 00 42 00-3

CERTIFICATION

This is to certify that I have visited the project site, have verified existing conditions and measurements and am fully aware of the scope and working conditions.

BIDDER:

Signature \_\_\_\_\_

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

Firm Name \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

FEIN: \_\_\_\_\_

Telephone: \_\_\_\_\_

FAX: \_\_\_\_\_

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

For Corporations only, Attested by:

\_\_\_\_\_  
Corporate Secretary

END

00 42 00-3

DIVISION 00 PROCUREMENT & CONTRACTING REQUIREMENTS  
**Section 00 43 13 Bid Security Form**

1. BID BOND

- 1.01 Each Bidder is required to post a Bid Bond for 5% of the Base Bid amount. Enclosed is AIA Document A310 Bid Bond. The Bidder may submit this certified check, cashiers' check or an approved bond from a Surety Company.

END

00 43 13-1



# Document A310™ – 2010

## ***Bid Bond***

**CONTRACTOR:**

*(Name, legal status and address)*

**SURETY:**

*(Name, legal status and principal place of business)*

**OWNER:**

*(Name, legal status and address)*

**BOND AMOUNT: \$**

**PROJECT:**

*(Name, location or address, and Project number, if any)*

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

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this    day of    ,

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Contractor as Principal) (Seal)

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

\_\_\_\_\_  
(Surety) (Seal)

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

DIVISION 00 PROCUREMENT & CONTRACTING REQUIREMENTS  
**Section 00 52 13 Agreement Between Owner and Contractor**

1. CONTRACT

- 1.01 The Bidder of Award is required to complete a contractual agreement with the Owner for the accepted amount of award. Enclosed is AIA Document A105 Standard Short Form of Agreement Between Owner and Contractor. The Contractor will submit the appropriate Certificate of Liability Insurance and Bond Forms for attachment to this document.

END

00 52 13-1





# AIA<sup>®</sup> Document A105<sup>™</sup> – 2017

## Standard Short Form of Agreement Between Owner and Contractor

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

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

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

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

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

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

The Owner and Contractor agree as follows.

Init.

AIA Document A105<sup>™</sup> – 2017. Copyright © 1993, 2007 and 2017 by The American Institute of Architects. All rights reserved. WARNING: This AIA<sup>®</sup> Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA<sup>®</sup> Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. To report copyright violations of AIA Contract Documents, e-mail The American Institute of Architects' legal counsel, [copyright@aia.org](mailto:copyright@aia.org).

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- 13 PROTECTION OF PERSONS AND PROPERTY
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- 15 MISCELLANEOUS PROVISIONS
- 16 TERMINATION OF THE CONTRACT
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### ARTICLE 1 THE CONTRACT DOCUMENTS

The Contractor shall complete the Work described in the Contract Documents for the Project. The Contract Documents consist of

- .1 this Agreement signed by the Owner and Contractor;
- .2 the drawings and specifications prepared by the Architect, dated \_\_\_\_\_, and enumerated as follows:

Drawings:  
Number

Title

Date

Specifications:  
Section

Title

Pages

.3 addenda prepared by the Architect as follows:

Number

Date

Pages

.4 written orders for changes in the Work, pursuant to Article 10, issued after execution of this Agreement;  
and

.5 other documents, if any, identified as follows:

## ARTICLE 2 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 2.1 The Contract Time is the number of calendar days available to the Contractor to substantially complete the Work.

### § 2.2 Date of Commencement:

Unless otherwise set forth below, the date of commencement shall be the date of this Agreement.

*(Insert the date of commencement if other than the date of this Agreement.)*

### § 2.3 Substantial Completion:

Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion, as defined in Section 12.5, of the entire Work:

*(Check the appropriate box and complete the necessary information.)*

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

☐ By the following date:

## ARTICLE 3 CONTRACT SUM

§ 3.1 The Contract Sum shall include all items and services necessary for the proper execution and completion of the Work. Subject to additions and deductions in accordance with Article 10, the Contract Sum is: (\$ )

§ 3.2 For purposes of payment, the Contract Sum includes the following values related to portions of the Work:

*(Itemize the Contract Sum among the major portions of the Work.)*

Portion of the Work

Value

§ 3.3 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and hereby accepted by the Owner:

*(Identify the accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)*

§ 3.4 Allowances, if any, included in the Contract Sum are as follows:  
(Identify each allowance.)

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

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

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

#### ARTICLE 4 PAYMENTS

§ 4.1 Based on Contractor's Applications for Payment certified by the Architect, the Owner shall pay the Contractor, in accordance with Article 12, as follows:

(Insert below timing for payments and provisions for withholding retainage, if any.)

§ 4.2 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate below, or in the absence thereof, at the legal rate prevailing at the place of the Project.

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

%

#### ARTICLE 5 INSURANCE

§ 5.1 The Contractor shall maintain the following types and limits of insurance until the expiration of the period for correction of Work as set forth in Section 14.2, subject to the terms and conditions set forth in this Section 5.1:

§ 5.1.1 Commercial General Liability insurance for the Project, written on an occurrence form, with policy limits of not less than (\$ ) each occurrence, (\$ ) general aggregate, and (\$ ) aggregate for products-completed operations hazard.

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

§ 5.1.3 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided that such primary and excess or umbrella insurance policies result in the same or greater coverage as those required under Section 5.1.1 and 5.1.2, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ 5.1.4 Workers' Compensation at statutory limits.

§ 5.1.5 Employers' Liability with policy limits not less than (\$ ) each accident, (\$ ) each employee, and (\$ ) policy limit.

§ 5.1.6 The Contractor shall provide builder's risk insurance to cover the total value of the entire Project on a replacement cost basis.

**§ 5.1.7 Other Insurance Provided by the Contractor**

*(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)*

**Coverage**

**Limits**

§ 5.2 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance and shall provide property insurance to cover the value of the Owner's property. The Contractor is entitled to receive an increase in the Contract Sum equal to the insurance proceeds related to a loss for damage to the Work covered by the Owner's property insurance.

§ 5.3 The Contractor shall obtain an endorsement to its Commercial General Liability insurance policy to provide coverage for the Contractor's obligations under Section 8.12.

§ 5.4 Prior to commencement of the Work, each party shall provide certificates of insurance showing their respective coverages.

§ 5.5 Unless specifically precluded by the Owner's property insurance policy, the Owner and Contractor waive all rights against (1) each other and any of their subcontractors, suppliers, agents, and employees, each of the other; and (2) the Architect, Architect's consultants, and any of their agents and employees, for damages caused by fire or other causes of loss to the extent those losses are covered by property insurance or other insurance applicable to the Project, except such rights as they have to the proceeds of such insurance.

**ARTICLE 6 GENERAL PROVISIONS**

**§ 6.1 The Contract**

The Contract represents the entire and integrated agreement between the parties and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a written modification in accordance with Article 10.

**§ 6.2 The Work**

The term "Work" means the construction and services required by the Contract Documents, and includes all other labor, materials, equipment, and services provided, or to be provided, by the Contractor to fulfill the Contractor's obligations.

**§ 6.3 Intent**

The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all.

**§ 6.4 Ownership and Use of Architect's Drawings, Specifications and Other Documents**

Documents prepared by the Architect are instruments of the Architect's service for use solely with respect to this Project. The Architect shall retain all common law, statutory, and other reserved rights, including the copyright. The Contractor, subcontractors, sub-subcontractors, and suppliers are authorized to use and reproduce the instruments of service solely and exclusively for execution of the Work. The instruments of service may not be used for other Projects or for additions to this Project outside the scope of the Work without the specific written consent of the Architect.

## **§ 6.5 Electronic Notice**

Written notice under this Agreement may be given by one party to the other by email as set forth below.

*(Insert requirements for delivering written notice by email such as name, title, and email address of the recipient, and whether and how the system will be required to generate a read receipt for the transmission.)*

## **ARTICLE 7 OWNER**

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

**§ 7.1.1** If requested by the Contractor, the Owner shall furnish all necessary surveys and a legal description of the site.

**§ 7.1.2** Except for permits and fees under Section 8.7.1 that are the responsibility of the Contractor, the Owner shall obtain and pay for other necessary approvals, easements, assessments, and charges.

**§ 7.1.3** Prior to commencement of the Work, at the written request of the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence.

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

If the Contractor fails to correct Work which is not in accordance with the Contract Documents, the Owner may direct the Contractor in writing to stop the Work until the correction is made.

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

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies, correct such deficiencies. In such case, the Architect may withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the cost of correction, provided the actions of the Owner and amounts charged to the Contractor were approved by the Architect.

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

**§ 7.4.1** The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project.

**§ 7.4.2** The Contractor shall coordinate and cooperate with the Owner's own forces and separate contractors employed by the Owner.

## **ARTICLE 8 CONTRACTOR**

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

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

**§ 8.1.2** The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner. Before commencing activities, the Contractor shall (1) take field measurements and verify field conditions; (2) carefully compare this and other information known to the Contractor with the Contract Documents; and (3) promptly report errors, inconsistencies, or omissions discovered to the Architect.

### **§ 8.2 Contractor's Construction Schedule**

The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work.

### **§ 8.3 Supervision and Construction Procedures**

**§ 8.3.1** The Contractor shall supervise and direct the Work using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work.

**§ 8.3.2** The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner, through the Architect, the names of subcontractors or suppliers for each portion of the Work. The Contractor shall not contract with any subcontractor or supplier to whom the Owner or Architect have made a timely and reasonable objection.

#### **§ 8.4 Labor and Materials**

**§ 8.4.1** Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work.

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

#### **§ 8.5 Warranty**

The Contractor warrants to the Owner and Architect that: (1) materials and equipment furnished under the Contract will be new and of good quality unless otherwise required or permitted by the Contract Documents; (2) the Work will be free from defects not inherent in the quality required or permitted; and (3) the Work will conform to the requirements of the Contract Documents. Any material or equipment warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 12.5.

#### **§ 8.6 Taxes**

The Contractor shall pay sales, consumer, use, and similar taxes that are legally required when the Contract is executed.

#### **§ 8.7 Permits, Fees and Notices**

**§ 8.7.1** The Contractor shall obtain and pay for the building permit and other permits and governmental fees, licenses, and inspections necessary for proper execution and completion of the Work.

**§ 8.7.2** The Contractor shall comply with and give notices required by agencies having jurisdiction over the Work. If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs. The Contractor shall promptly notify the Architect in writing of any known inconsistencies in the Contract Documents with such governmental laws, rules, and regulations.

#### **§ 8.8 Submittals**

The Contractor shall promptly review, approve in writing, and submit to the Architect shop drawings, product data, samples, and similar submittals required by the Contract Documents. Shop drawings, product data, samples, and similar submittals are not Contract Documents.

#### **§ 8.9 Use of Site**

The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits, the Contract Documents, and the Owner.

#### **§ 8.10 Cutting and Patching**

The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly.

#### **§ 8.11 Cleaning Up**

The Contractor shall keep the premises and surrounding area free from accumulation of debris and trash related to the Work. At the completion of the Work, the Contractor shall remove its tools, construction equipment, machinery, and surplus material; and shall properly dispose of waste materials.

#### **§ 8.12 Indemnification**

To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them, from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a subcontractor, anyone directly or indirectly employed by them or anyone for whose acts

they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder.

## **ARTICLE 9 ARCHITECT**

§ 9.1 The Architect will provide administration of the Contract as described in the Contract Documents. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 9.2 The Architect will visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the Work.

§ 9.3 The Architect will not have control over or charge of, and will not be responsible for, construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility. The Architect will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents.

§ 9.4 Based on the Architect's observations and evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor.

§ 9.5 The Architect has authority to reject Work that does not conform to the Contract Documents.

§ 9.6 The Architect will promptly review and approve or take appropriate action upon Contractor's submittals, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 9.7 On written request from either the Owner or Contractor, the Architect will promptly interpret and decide matters concerning performance under, and requirements of, the Contract Documents.

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

§ 9.9 The Architect's duties, responsibilities, and limits of authority as described in the Contract Documents shall not be changed without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

## **ARTICLE 10 CHANGES IN THE WORK**

§ 10.1 The Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract, consisting of additions, deletions or other revisions, and the Contract Sum and Contract Time shall be adjusted accordingly, in writing. If the Owner and Contractor cannot agree to a change in the Contract Sum, the Owner shall pay the Contractor its actual cost plus reasonable overhead and profit.

§ 10.2 The Architect may authorize or order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. Such authorization or order shall be in writing and shall be binding on the Owner and Contractor. The Contractor shall proceed with such minor changes promptly.

§ 10.3 If concealed or unknown physical conditions are encountered at the site that differ materially from those indicated in the Contract Documents or from those conditions ordinarily found to exist, the Contract Sum and Contract Time shall be subject to equitable adjustment.

## **ARTICLE 11 TIME**

§ 11.1 Time limits stated in the Contract Documents are of the essence of the Contract.

§ 11.2 If the Contractor is delayed at any time in progress of the Work by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, or other causes beyond the Contractor's control, the Contract Time shall be subject to equitable adjustment.

§ 11.3 Costs caused by delays or by improperly timed activities or defective construction shall be borne by the responsible party.



## **ARTICLE 12 PAYMENTS AND COMPLETION**

### **§ 12.1 Contract Sum**

The Contract Sum stated in this Agreement, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

### **§ 12.2 Applications for Payment**

**§ 12.2.1** At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment for Work completed in accordance with the values stated in this Agreement. The Application shall be supported by data substantiating the Contractor's right to payment as the Owner or Architect may reasonably require, such as evidence of payments made to, and waivers of liens from, subcontractors and suppliers. Payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment stored, and protected from damage, off the site at a location agreed upon in writing.

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

### **§ 12.3 Certificates for Payment**

The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in part; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole. If certification or notification is not made within such seven day period, the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time and the Contract Sum shall be equitably adjusted due to the delay.

### **§ 12.4 Progress Payments**

**§ 12.4.1** After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner provided in the Contract Documents.

**§ 12.4.2** The Contractor shall promptly pay each subcontractor and supplier, upon receipt of payment from the Owner, an amount determined in accordance with the terms of the applicable subcontracts and purchase orders.

**§ 12.4.3** Neither the Owner nor the Architect shall have responsibility for payments to a subcontractor or supplier.

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

### **§ 12.5 Substantial Completion**

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

**§ 12.5.2** When the Contractor believes that the Work or designated portion thereof is substantially complete, it will notify the Architect and the Architect will make an inspection to determine whether the Work is substantially complete. When the Architect determines that the Work is substantially complete, the Architect shall prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, establish the responsibilities of the Owner and Contractor, and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

## **§ 12.6 Final Completion and Final Payment**

**§ 12.6.1** Upon receipt of a final Application for Payment, the Architect will inspect the Work. When the Architect finds the Work acceptable and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment.

**§ 12.6.2** Final payment shall not become due until the Contractor submits to the Architect releases and waivers of liens, and data establishing payment or satisfaction of obligations, such as receipts, claims, security interests, or encumbrances arising out of the Contract.

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

## **ARTICLE 13 PROTECTION OF PERSONS AND PROPERTY**

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs, including all those required by law in connection with performance of the Contract. The Contractor shall take reasonable precautions to prevent damage, injury, or loss to employees on the Work and other persons who may be affected thereby, the Work and materials and equipment to be incorporated therein, and other property at the site or adjacent thereto. The Contractor shall promptly remedy damage and loss to property caused in whole or in part by the Contractor, or by anyone for whose acts the Contractor may be liable.

## **ARTICLE 14 CORRECTION OF WORK**

**§ 14.1** The Contractor shall promptly correct Work rejected by the Architect as failing to conform to the requirements of the Contract Documents. The Contractor shall bear the cost of correcting such rejected Work, including the costs of uncovering, replacement, and additional testing.

**§ 14.2** In addition to the Contractor's other obligations including warranties under the Contract, the Contractor shall, for a period of one year after Substantial Completion, correct work not conforming to the requirements of the Contract Documents.

**§ 14.3** If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct it in accordance with Section 7.3.

## **ARTICLE 15 MISCELLANEOUS PROVISIONS**

### **§ 15.1 Assignment of Contract**

Neither party to the Contract shall assign the Contract as a whole without written consent of the other.

### **§ 15.2 Tests and Inspections**

**§ 15.2.1** At the appropriate times, the Contractor shall arrange and bear cost of tests, inspections, and approvals of portions of the Work required by the Contract Documents or by laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities.

**§ 15.2.2** If the Architect requires additional testing, the Contractor shall perform those tests.

**§ 15.2.3** The Owner shall bear cost of tests, inspections, or approvals that do not become requirements until after the Contract is executed. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

### **§ 15.3 Governing Law**

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules.

## **ARTICLE 16 TERMINATION OF THE CONTRACT**

### **§ 16.1 Termination by the Contractor**

If the Work is stopped under Section 12.3 for a period of 14 days through no fault of the Contractor, the Contractor may, upon seven additional days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed including reasonable overhead and profit, and costs incurred by reason of such termination.

**§ 16.2 Termination by the Owner for Cause**

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

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

**§ 16.2.2** When any of the above reasons exist, the Owner, after consultation with the Architect, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may

- .1 take possession of the site and of all materials thereon owned by the Contractor, and
- .2 finish the Work by whatever reasonable method the Owner may deem expedient.

**§ 16.2.3** When the Owner terminates the Contract for one of the reasons stated in Section 16.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

**§ 16.2.4** If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner. This obligation for payment shall survive termination of the Contract.

**§ 16.3 Termination by the Owner for Convenience**

The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause. The Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

**ARTICLE 17 OTHER TERMS AND CONDITIONS**

*(Insert any other terms or conditions below.)*

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

*(If required by law, insert cancellation period, disclosures or other warning statements above the signatures.)*

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

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

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

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

LICENSE NO.:

JURISDICTION:

DIVISION 00 PROCUREMENT & CONTRACTING REQUIREMENTS  
**Section 00 61 13 Bond Forms**

1. PERFORMANCE BOND

- 1.01 The Contractor of Award is required to post a Performance Bond for 100% of the project cost. Enclosed is AIA Document A312 Performance Bond. The Contractor may submit this certified bond or an approved bond from a Surety Company prior to contract processing.

2. PAYMENT BOND

- 2.01 The Contractor of Award is required to post a Payment Bond for 100% of the project cost. Enclosed is AIA Document A312 Payment Bond. The Contractor may submit this certified bond or an approved bond from a Surety Company prior to contract processing.

END

0 61 13-1

# AIA<sup>®</sup> Document A312<sup>™</sup> – 2010

## *Performance Bond*

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

**SURETY:**  
*(Name, legal status and principal place of business)*

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

**CONSTRUCTION CONTRACT**  
Date:

Amount:

Description:  
*(Name and location)*

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

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

AIA Document A312–2010 combines two separate bonds, a Performance Bond and a Payment Bond, into one form. This is not a single combined Performance and Payment Bond.

**BOND**  
Date:  
*(Not earlier than Construction Contract Date)*

Amount:

Modifications to this Bond: ☐ None ☐ See Section 16

<b>CONTRACTOR AS PRINCIPAL</b>	<b>SURETY</b>
Company: <i>(Corporate Seal)</i>	Company: <i>(Corporate Seal)</i>

Signature: _____	Signature: _____
Name _____	Name _____
and Title: _____	and Title: _____

*(Any additional signatures appear on the last page of this Performance Bond.)*

*(FOR INFORMATION ONLY — Name, address and telephone)*

**AGENT or BROKER:**

**OWNER'S REPRESENTATIVE:**

*(Architect, Engineer or other party:)*

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

- .1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
- .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
- .3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

- .1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

- .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
- .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

#### § 14 Definitions

§ 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

*(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)*

**CONTRACTOR AS PRINCIPAL**

**SURETY**

Company:

*(Corporate Seal)*

Company:

*(Corporate Seal)*

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

Name and Title: \_\_\_\_\_

Address: \_\_\_\_\_

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

Name and Title: \_\_\_\_\_

Address: \_\_\_\_\_

Init.



# Document A312™ – 2010

## *Payment Bond*

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

SURETY:  
*(Name, legal status and principal place  
of business)*

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

CONSTRUCTION CONTRACT  
Date:

Amount:

Description:  
*(Name and location)*

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

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

AIA Document A312–2010 combines two separate bonds, a Performance Bond and a Payment Bond, into one form. This is not a single combined Performance and Payment Bond.

BOND  
Date:  
*(Not earlier than Construction Contract Date)*

Amount:

Modifications to this Bond: ☐ None ☐ See Section 18

CONTRACTOR AS PRINCIPAL  
Company: *(Corporate Seal)* SURETY  
Company: *(Corporate Seal)*

Signature: \_\_\_\_\_ Signature: \_\_\_\_\_  
Name \_\_\_\_\_ Name \_\_\_\_\_  
and Title: \_\_\_\_\_ and Title: \_\_\_\_\_  
*(Any additional signatures appear on the last page of this Payment Bond.)*

*(FOR INFORMATION ONLY — Name, address and telephone)*

AGENT or BROKER: OWNER'S REPRESENTATIVE:  
*(Architect, Engineer or other party:)*

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- .1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- .2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

#### § 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- .1 the name of the Claimant;
- .2 the name of the person for whom the labor was done, or materials or equipment furnished;
- .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- .4 a brief description of the labor, materials or equipment furnished;
- .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- .7 the total amount of previous payments received by the Claimant; and
- .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

*(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)*

CONTRACTOR AS PRINCIPAL

SURETY

Company:

*(Corporate Seal)*

Company:

*(Corporate Seal)*

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

Name and Title: \_\_\_\_\_

Address: \_\_\_\_\_

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

Name and Title: \_\_\_\_\_

Address: \_\_\_\_\_

DIVISION 00 PROCUREMENT & CONTRACTING REQUIREMENTS  
**Section 00 62 76 Application for Payment Form**

1. PAYMENT REQUEST

- 1.01 The Contractor is required to submit a payment request on the approved form. Enclosed is AIA Document G702 Application and Certificate for Payment. The Contractor will submit this form with the Continuation Sheet to the Architect for each pay request for processing before presentation to the Owner.

END

00 62 76-1

# APPLICATION AND CERTIFICATE FOR PAYMENT

AIA DOCUMENT G702 (Instructions on reverse side) PAGE ONE OF \_\_\_\_\_ PAGES

TO OWNER: PROJECT: APPLICATION NO.: Distribution to:  
PERIOD TO: OWNER  
PROJECT NOS: ARCHITECT  
CONTRACTOR  
CONTRACT DATE: CONTRACTOR

FROM CONTRACTOR: VIA ARCHITECT: CONTRACT FOR: CONTRACTOR: By: Date:

CONTRACTOR'S APPLICATION FOR PAYMENT  
Application is made for payment, as shown below, in connection with the Contract.  
Continuation Sheet, AIA Document G703, is attached.

1. ORIGINAL CONTRACT SUM .....\$  
2. Net change by Change Orders .....\$  
3. CONTRACT SUM TO DATE (Line 1 + 2) .....\$  
4. TOTAL COMPLETED & STORED TO DATE .....\$  
(Column G on G703)  
5. RETAINAGE:  
a. \_\_\_\_\_% of Completed Work .....\$  
(Columns D + E on G703)  
b. \_\_\_\_\_% of Stored Material .....\$  
(Column F on G703)  
Total Retainage (Line 5a + 5b or  
Total in Column I of G703) .....\$  
6. TOTAL EARNED LESS RETAINAGE .....\$  
(Line 4 less Line 5 Total)  
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT  
(Line 6 from prior Certificate) .....\$  
8. CURRENT PAYMENT DUE .....\$  
9. BALANCE TO FINISH, INCLUDING RETAINAGE  
(Line 3 less Line 6) .....\$

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner		
Total approved this Month		
TOTALS		
NET CHANGES by Change Order		

## ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED .....\$  
(Attach explanation if amount certified differs from the amount applied for. Initial all figures on this Application and on the Continuation Sheet that are changed to conform to the amount certified.)

ARCHITECT: By: Date: This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

# INSTRUCTION SHEET

## AIA DOCUMENTS G702 and G703

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### A. GENERAL INFORMATION

#### 1. Purpose and Related Documents

AIA Document G702, Application and Certificate for Payment, is to be used in conjunction with AIA Document G703, Continuation Sheet. These documents are designed to be used on a Project where a Contractor has a direct Agreement with the Owner. Procedures for their use are covered in AIA Document A201, General Conditions of the Contract for Construction, 1987 Edition.

#### 2. Use of Current Documents

Prior to using any AIA document, the user should consult the AIA, an AIA component chapter or a current AIA Documents List to determine the current edition of each document.

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AIA Documents G702 and G703 are copyrighted works and may not be reproduced or excerpted from in substantial part without the express written permission of the AIA. The documents are intended to be used as consumables—that is, the original documents purchased by the user are intended to be consumed in the course of being used. There is no implied permission to reproduce these documents, nor does membership in The American Institute of Architects confer any further rights to reproduce G702 and G703.

A limited license is hereby granted to retail purchasers to reproduce a maximum of ten copies of a completed or executed G702 and G703, but only for use in connection with a particular Project. Further reproductions are prohibited without the express written permission of the AIA.

### B. COMPLETING THE G702 FORM:

After the Contractor has completed AIA Document G703, Continuation Sheet, summary information should be transferred to AIA Document G702, Application and Certificate for Payment.

The Contractor should sign G702, have it notarized and submit it, together with G703, to the Architect.

The Architect should review G702 and G703 and, if they are acceptable, complete the Architect's Certificate for Payment on G702. The Architect may certify a different amount than that applied for, pursuant to Paragraphs 9.5 and 9.6 of A201. The Architect should then initial all figures on G702 and G703 that have been changed to conform to the amount certified and attach an explanation. The completed G702 and G703 should be forwarded to the Owner.

### C. COMPLETING THE G703 FORM:

**Heading:** This information should be completed to be consistent with similar information on AIA Document G702, Application and Certificate for Payment.

**Columns A, B & C:** These columns should be completed by identifying the various portions of the Project and their scheduled value consistent with the schedule of values submitted to the Architect at the commencement of the Project or as subsequently adjusted. The breakdown may be by sections of the Work or by Subcontractors and should remain consistent throughout the Project. Multiple pages should be used when required.

Column C should be subtotaled at the bottom when more than one page is used and totaled on the last page. Initially, this total should equal the original Contract Sum. The total of column C may be adjusted by Change Orders during the Project.

**Column D:** Enter in this column the amount of completed work covered by the previous application (columns D + E from the previous application). Values from column F (Materials Presently Stored) from the previous application should not be entered in this column.

**Column E:** Enter here the value of Work completed at the time of this application, including the value of materials incorporated into the project which were listed on the previous application under Materials Presently Stored (column F).

**Column F:** Enter here the value of Materials Presently Stored for which payment is sought. The total of the column *must* be recalculated at the end of each pay period. This value covers both materials newly stored for which payment is sought and materials previously stored which are not yet incorporated into the Project. Mere payment by the Owner for stored materials does not result in a deduction from this column. Only as materials are incorporated into the Project is their value deducted from this column and incorporated into column E (Work Completed—This Period).

**Column G:** Enter here the total of columns D, E and F. Calculate the percentage completed by dividing column G by column C.

**Column H:** Enter here the difference between column C (Scheduled Value) and column G (Total Completed and Stored to Date).

**Column I:** This column is normally used only for contracts where variable retainage is permitted on a line-item basis. It need not be completed on projects where a constant retainage is withheld from the overall contract amount.

**Change Orders:** Although Change Orders could be incorporated by changing the schedule of values each time a Change Order is added to the Project, this is not normally done. Usually, Change Orders are listed separately, either on their own G703 form or at the end of the basic schedule. The amount of the original contract adjusted by Change Orders is to be entered in the appropriate location on the G702 form.

**Construction Change Directives:** Amounts not in dispute that have been included in Construction Change Directives should be incorporated into one or more Change Orders. Amounts remaining in dispute should be dealt with according to Paragraph 7.3 in A201.

### D. MAKING PAYMENT

The Owner should make payment directly to the Contractor based on the amount certified by the Architect on AIA Document G702, Application and Certificate for Payment. The completed form contains the name and address of the Contractor. Payment should not be made to any other party unless specifically indicated on G702.

### E. EXECUTION OF THE DOCUMENT

Each person executing the Agreement should indicate the capacity in which they are acting (i.e., president, secretary, partner, etc.) and the authority under which they are executing the Agreement. Where appropriate, a copy of the resolution authorizing the individual to act on behalf of the firm or entity should be attached.

# CONTINUATION SHEET

AIA DOCUMENT G703 (Instructions on reverse side)

PAGE OF PAGES

AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT, containing Contractor's signed Certification, is attached.

In tabulations below, amounts are stated to the nearest dollar.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO.:

APPLICATION DATE:

PERIOD TO:

ARCHITECT'S PROJECT NO.:

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		E THIS PERIOD	F MATERIALS PRESENTLY STORED (NOT IN D OR E)	G		H BALANCE TO FINISH (C - G)	I RETAINAGE (IF VARIABLE) RATE)
			FROM PREVIOUS APPLICATION (D + E)				TOTAL COMPLETED AND STORED TO DATE (D + E + F)	% (G ÷ C)		

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G703-1992

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# INSTRUCTION SHEET FOR AIA DOCUMENT G703

## A. GENERAL INFORMATION

### 1. Purpose and Related Documents

AIA Document G702, Application and Certificate for Payment, is to be used in conjunction with AIA Document G703, Continuation Sheet. These documents are designed for use on Projects where the Contractor has a direct Agreement with the Owner. Procedures for their use are covered in AIA Document A201, General Conditions of the Contract for Construction, 1987 Edition.

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## B. COMPLETING THE G703 FORM:

**Heading:** This information should be completed in a manner consistent with similar information on AIA Document G702, Application and Certificate for Payment.

**Columns A, B & C:** These columns should be completed by identifying the various portions of the Project and their scheduled values consistent with the schedule of values submitted to the Architect at the commencement of the Project or as subsequently adjusted. The breakdown may be by sections of the Work or by Subcontractors and should remain consistent throughout the Project. Multiple pages should be used when required.

Column C should be subtotaled at the bottom when more than one page is used and totaled on the last page. Initially, this total should equal the original Contract Sum. The total of column C may be adjusted by Change Orders during the Project.

**Column D:** Enter in this column the amount of completed Work covered by the previous application (columns D & E from the previous application). Values from column F (Materials Presently Stored) from the previous application should not be entered in this column.

**Column E:** Enter here the value of Work completed at the time of this application, including the value of materials incorporated in the project that were listed on the previous application under Materials Presently Stored (column F).

**Column F:** Enter here the value of Materials Presently Stored for which payment is sought. The total of the column must be recalculated at the end of each pay period. This value covers both materials newly stored for which payment is sought and materials previously stored which are not yet incorporated into the Project. Mere payment by the Owner for stored materials does not result in a deduction from this column. Only as materials are incorporated into the Project is their value deducted from this column and incorporated into column E (Work Completed—This Period.)

**Column G:** Enter here the total of columns D, E and F. Calculate the percentage completed by dividing column G by column C.

**Column H:** Enter here the difference between column C (Scheduled Value) and column G (Total Completed and Stored to Date).

**Column I:** This column is normally used only for contracts where variable retainage is permitted on a line-item basis. It need not be completed on projects where a constant retainage is withheld from the overall contract amount.

**Change Orders:** Although Change Orders could be incorporated by changing the schedule of values each time a Change Order is added to the Project, this is not normally done. Usually, Change Orders are listed separately, either on their own G703 form or at the end of the basic schedule. The amount of the original contract adjusted by Change Orders is to be entered in the appropriate location on the G702 form.

**Construction Change Directives:** Amounts not in dispute that have been included in Construction Change Directives should be incorporated into one or more Change Orders. Amounts remaining in dispute should be dealt with according to Paragraph 7.3 in A201.

*The following is an example of a Continuation Sheet for work in progress. Please note that dollar amounts shown below are for illustrative purposes only, and are not intended to reflect actual construction costs.*

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		F MATERIALS PRESENTLY STORED (NOT IN D OR E)	G		H BALANCE TO FINISH (C - G)	I RETAINAGE (IF VARIABLE RATE)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD		TOTAL COMPLETED AND STORED TO DATE (D + E + F)	% (G ÷ C)		
1	MOBILIZATION	5,000	5,000	0	0	5,000	100	0	NOT APPLICABLE TO CONSTANT RATE RETAINAGE
2	STUMP REMOVAL	5,000	5,000	0	0	5,000	100	0	
3	EARTH WORK	15,000	10,000	5,000	0	15,000	100	0	
4	LOWER RETAINING WALL	10,000	0	5,000	0	5,000	50	5,000	
5	CURBS & MISC. CONC.	5,000	0	0	0	0	0	5,000	
6	PAVING, UPPER DRIVE	20,000	0	0	0	0	0	20,000	
7	PAVING, LOWER DRIVE	20,000	0	0	0	0	0	20,000	
8	PAVERS	10,000	0	0	10,000	10,000	50	10,000	
9	BRICK WORK	5,000	0	0	0	0	0	5,000	
		105,000	10,000	10,000	10,000	40,000		65,000	

DIVISION 00 PROCUREMENT & CONTRACTING REQUIREMENTS  
**Section 00 73 00 - Supplementary Conditions**

**AGREEMENT AND GENERAL CONDITION**

AIA Document A105, Standard Short Form of Agreement Between Owner and Contractor, 2017 Edition Articles 1 through 17 inclusive, is a part of the contract.

**SUPPLEMENTS**

The following supplements modify, change, delete from or add to the General Provisions contained in AIA Document A105, Articles 1 through 17. Where any articles of the general conditions is modified or paragraph, subparagraph or clause thereof is modified or deleted by these supplements, the unaltered provisions of that article, paragraph, subparagraph or clause shall remain in effect.

**ARTICLE 5 - INSURANCE**

Add the following minimum coverages to the following subparagraphs:

"5.1.1 Commercial General Liability: \$1,000,000 each occurrence; \$1,000,000 general aggregate; \$1,000,000 aggregate for products-completed operations hazard."

"5.1.2 Automobile Liability: \$1,000,000."

"5.1.5 Employers' Liability: \$500,000 each accident; \$500,000 each employee; \$500,000 policy limit."

"5.1.7 Other Insurance Provided by the Contractor: Umbrella Liability Coverage; \$1,000,000 limit."

Add the following subparagraph to Subparagraph 5.1.4:

"5.1.4.1 Include Workers' Compensation and Occupational Diseases as required by the State of Illinois Statutory Limits."

**ARTICLE 6 - GENERAL PROVISIONS**

Add the following paragraphs to Article 6:

"6.6 Where conflict exists within or between parts of the Contract Documents, or between the Contract documents and applicable standards, codes and ordinances, the more stringent, or higher quality requirements shall apply. Large scale drawings shall take precedence over small scale drawings; figured dimensions on the drawings over scaled dimensions and noted materials over graphic representations."

"6.7 For brevity, certain phrases in the Contract Documents are understood. Unless specifically stated as an obligation of the Owner, it is understood to be an obligation of the Contractor. Where a requirement of the Contract is expressed in the indicative mood, beginning with 'The Contractor shall' the preceding phrase 'the Owner and the Contractor agree that' is understood. Where a requirement of the Contract is expressed in the imperative mood, beginning with such words as: 'Construct', 'Fabricate', etc., the preceding phrase. 'The Owner and the Contractor agree that the Contractor shall' is understood. Where phrases such as 'or equal' or 'approved equal', are used, the following phrase 'by the Owner, or by the Architect acting for the Owner' is understood. Where phrases such as 'or equal' or 'approved equal', are used, the following phrase 'as determined by the Owner, or the Architect acting for the Owner' is understood."

**ARTICLE 8 - CONTRACTOR**

## SECTION 00 73 00-2

Add the following subparagraphs to Paragraph 8.8:

"8.8.1 Shop Drawings (or Manufacturer's Data) shall be submitted to the Architect/Engineer in five (5) copies. In the event of disapproval, two (2) copies of the Shop Drawings will be returned to the Contractor with the Architect's comments. After correction of the Shop Drawings, the Contractor shall re-submit the Shop Drawings as required for the original submittal. Upon approval of the Shop Drawings, the Architect will return two (2) approved copies to the Contractor."

"8.8.2 One of each sample requested shall be submitted to the Architect, unless otherwise specified or directed. In the event of disapproval of the sample, the Architect will so notify the Contractor in writing with comments. After correction or replacement of the sample, the Contractor shall resubmit the samples as required for the original submittal. Upon approval of the sample, the Architect will so notify the Contractor in writing."

## ARTICLE 12 - PAYMENTS AND COMPLETION

Add the following subparagraphs to Paragraph 12.4:

"12.4.5 Unless otherwise stated in the Agreement, the Owner will retain ten percent (10%) of the amount due the Contractor on Account of progress payments until Final Payment."

"12.4.6 Stored Materials: If payment for stored materials is requested, the Contractor must provide an invoice/s for the material. The request may not exceed the invoice/s amount. Proof of insurance for the material at the stored location shall be provided. Photographs of the stored materials will be provided if requested. The Contractor must accommodate the Architect/Engineer requests if a visit of proof to the stored materials site is deemed necessary."

Add the following subparagraph to Paragraph 12.6:

"12.6.4 Final Payment shall be due at the completion of all work as required per contractors contract. If at that time there are any remaining uncompleted minor items, an amount equal to two hundred percent (200%) of the value of each item as determined by the Architect shall be withheld until said item or items are complete."

## ARTICLE 15 - MISCELLANEOUS PROVISIONS

Add the following subparagraph to Paragraph 15.2:

"15.2.4 The Contractor shall furnish five (5) copies of all inspection and test reports to the Architect, in addition to those which may be required by public authorities."

## ARTICLE 17 - OTHER TERMS AND CONDITIONS

Add the following paragraphs to Article 17:

"17.1 Contractors will be furnished three (3) complete sets of plans & specifications free of charge. Should a contractor require additional drawings, he shall have them reproduced at his expense."

"17.2 Progress Meetings - Contractors shall attend construction progress meetings at the Project Site when called by the Architect/Engineer. Such meetings shall be for the purpose of discussing Work progress and schedules, resolving problems, and issuing instructions as may be required. The attendance of subcontractors and suppliers shall be required if so requested by Owner or Architect/Engineer."

## SECTION 00 73 00-3

"17.3 Cleaning Up - The Contractor shall at all times keep the premises free from accumulation of waste materials or rubbish caused by his operations. At the completion of the work he shall remove all his waste material and rubbish from and about the project as well as all his tools and equipment. He shall repair any damages caused as a consequence of his work to the buildings and/or grounds. If the Contractor fails to clean up at the completion of the work, the Owner may do so and cost thereof shall be charged to the Contractor."

"17.4 All Contractors and Subcontractors employed in this project shall comply with all applicable provisions of all Federal and State laws which prohibit discrimination because of race, color, religion, sex, marital status, national origin, ancestry, age, and physical or mental handicap, and all rules and regulations, promulgated and adopted pursuant thereto."

"17.5 Contractors and Subcontractors shall comply with the provision of the Copeland "Anti Kick-Back Act" (40 U.S.C. 276c) as supplemented in U.S. Department of Labor regulations (29 CFR, Part 3).

"17.6 Contractors and Subcontractors shall comply with Executive Order No. 11246 entitled "Equal Employment Opportunity", as amended by Executive Order No. 11375 and as supplemented in the Department of Labor regulations. Contractors and Subcontractors shall also comply with all state statutes and regulations applicable to Equal Employment Opportunity."

"17.7 Contractors and Subcontractors shall comply with the Clean Air Act, as amended (42 U.S.C. 1857 et seq.) the Federal Air Pollution Control Act, as amended (33 U.S.C. 1251 et seq.), and EPA Regulations (40 CFR, part 15). Contractors and Subcontractors shall also comply with any applicable Illinois State Statutes and/or regulations."

"17.8 All Contractors and Subcontractors shall use only steel products in the construction of this project which have been manufactured or produced in the United States."

"17.9 Project Supervision: The General Contractor must assign a Project Superintendent to the project. This Project Superintendent shall be responsible for the scheduling of project manpower and materials and generally direct the work. The Project Superintendent shall be present at the project site to provide supervision at all times when three or more workers are present. The General Contractor shall not change the Project Superintendent without prior written consent from the Owner and Architect."

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS  
**Document 00 73 43 - Wage Rate Requirements**

1. PREVAILING WAGE ACT

1.01 REQUIREMENTS

- A. Pursuant to Illinois Compiled Statutes 820 ILCS 130/0.01 et. seq., these specifications list on the following pages, the Illinois Department of Labor prevailing rate of wages for the County where the Contract is being performed and for each craft or type of worker needed to execute the contract.
1. A contractor or subcontractor participating in a public works project must also submit a Certified Payroll **to the public body** every month. This Certified Payroll must consist of a complete copy of the records required to be kept for at least three years.
  2. These records must include each worker's name, address, telephone number (if available), social security number, classification(s), hourly wages paid in each pay period, number of hours worked each day, and the starting and ending times of each work day.
  3. The monthly Certified Payroll shall also include a statement signed by the contractor or subcontractor submitting that: (1) the records are true and accurate; (2) the hourly rate paid to each worker is not less than the general prevailing wage rate required; and (3) the contractor or subcontractor is aware that filing a Certified Payroll that he or she knows to be false is a class B misdemeanor.

END SECTION

## Wabash County Prevailing Wage Rates posted on 1/28/2020

Trade Title	Rg	Type	C	Base	Foreman	Overtime				H/W	Pension	Vac	Trng	Other Ins
						M-F	Sa	Su	Hol					
ASBESTOS ABT-GEN	All	ALL		28.50	28.95	1.5	1.5	2.0	2.0	7.53	15.94	0.00	0.90	
ASBESTOS ABT-MEC	All	BLD		22.40	23.40	1.5	1.5	2.0	2.0	6.80	6.55	0.00	0.50	
BOILERMAKER	All	BLD		39.00	41.50	1.5	1.5	2.0	2.0	7.07	24.52	0.00	1.05	
BRICK MASON	All	BLD		31.25	33.13	1.5	1.5	2.0	2.0	9.35	10.00	0.00	0.88	
CARPENTER	All	BLD		36.84	38.34	1.5	1.5	2.0	2.0	7.42	9.75	0.00	0.60	
CARPENTER	All	HWY		36.82	38.57	1.5	1.5	2.0	2.0	7.42	9.25	0.00	0.50	0.50
CEMENT MASON	All	BLD		33.76	36.26	1.5	1.5	2.0	2.0	9.35	10.65	0.00	0.50	
CEMENT MASON	All	HWY		29.72	31.22	1.5	1.5	2.0	2.0	9.35	8.56	0.00	0.30	
CERAMIC TILE FINISHER	All	BLD		29.75	29.75	1.5	1.5	2.0	2.0	9.35	10.00	0.00	0.88	
COMMUNICATION TECHNICIAN	All	BLD		35.22	37.22	1.5	1.5	2.0	2.0	7.75	5.64	0.00	0.40	
ELECTRIC PWR EQMT OP	All	ALL	1	42.59	57.10	1.5	1.5	2.0	2.0	7.25	11.93	0.00	0.43	
ELECTRIC PWR EQMT OP	All	ALL	2	37.99	57.10	1.5	1.5	2.0	2.0	7.25	10.64	0.00	0.38	
ELECTRIC PWR GRNDMAN	All	ALL		31.24	57.10	1.5	1.5	2.0	2.0	7.25	8.75	0.00	0.31	
ELECTRIC PWR LINEMAN	All	ALL		53.47	57.10	1.5	1.5	2.0	2.0	7.25	14.97	0.00	0.54	
ELECTRICIAN	All	BLD		36.90	39.67	1.5	1.5	2.0	2.0	7.05	7.75	0.00	0.65	
ELEVATOR CONSTRUCTOR	All	BLD		50.09	56.35	2.0	2.0	2.0	2.0	15.57	17.51	4.50	0.62	
FLOOR LAYER	All	BLD		34.21	34.96	1.5	1.5	2.0	2.0	7.42	9.25	0.00	0.50	0.50
GLAZIER	All	BLD		27.23	29.43	1.5	1.5	2.0	2.0	6.22	6.95	0.00	0.40	
HEAT/FROST INSULATOR	All	BLD		31.12	32.62	1.5	1.5	2.0	2.0	6.35	13.34	0.00	0.45	
IRON WORKER	All	ALL		29.00	31.00	1.5	1.5	2.0	2.0	10.01	13.08	0.00	0.53	
LABORER	All	BLD		27.50	27.95	1.5	1.5	2.0	2.0	7.53	15.94	0.00	0.80	
LABORER	All	HWY		27.50	27.95	1.5	1.5	2.0	2.0	7.53	15.94	0.00	0.80	
MACHINIST	All	BLD		48.93	51.43	1.5	1.5	2.0	2.0	7.68	8.95	1.85	1.32	
MARBLE FINISHER	All	BLD		29.75	29.75	1.5	1.5	2.0	2.0	9.35	10.00	0.00	0.88	
MARBLE MASON	All	BLD		31.25	33.13	1.5	1.5	2.0	2.0	9.35	10.00	0.00	0.88	
MILLWRIGHT	All	BLD		36.84	38.34	1.5	1.5	2.0	2.0	7.42	9.25	0.00	0.50	0.50
MILLWRIGHT	All	HWY		36.82	38.57	1.5	1.5	2.0	2.0	7.42	9.25	0.00	0.50	0.50
OPERATING ENGINEER	All	ALL	1	41.65	42.65	1.5	1.5	2.0	2.0	9.95	10.90	0.00	1.15	
OPERATING ENGINEER	All	ALL	2	26.55	42.65	1.5	1.5	2.0	2.0	9.95	10.90	0.00	1.15	
OPERATING ENGINEER	All	ALL	3	42.65	43.65	1.5	1.5	2.0	2.0	9.95	10.90	0.00	1.15	
OPERATING ENGINEER	All	O&C		25.00	41.25	1.5	1.5	2.0	2.0	8.50	9.90	0.00	0.95	

PAINTER	All	BLD		26.45	27.95	1.5	1.5	2.0	2.0	6.75	6.30	0.00	0.40	
PAINTER	All	HWY		27.60	29.10	1.5	1.5	2.0	2.0	6.75	6.30	0.00	0.40	
PAINTER OVER 30 FT.	All	BLD		27.20	28.70	1.5	1.5	2.0	2.0	6.75	6.30	0.00	0.40	
PAINTER PWR EQMT	All	BLD		27.45	28.95	1.5	1.5	2.0	2.0	6.75	6.30	0.00	0.40	
PAINTER PWR EQMT	All	HWY		28.60	30.10	1.5	1.5	2.0	2.0	6.75	6.30	0.00	0.40	
PILEDRIIVER	All	BLD		36.84	38.34	1.5	1.5	2.0	2.0	7.42	9.25	0.00	0.50	0.50
PILEDRIIVER	All	HWY		36.82	38.57	1.5	1.5	2.0	2.0	7.42	9.25	0.00	0.50	0.50
PIPEFITTER	All	BLD		35.35	37.47	1.5	1.5	2.0	2.0	7.95	8.87	0.00	0.82	
PLASTERER	All	BLD		33.43	35.43	1.5	1.5	2.0	2.0	9.35	12.58	0.00	0.50	
PLUMBER	All	BLD		38.23	41.10	1.5	1.5	2.0	2.0	9.50	7.33	0.00	0.80	0.25
ROOFER	All	BLD		28.80	30.80	1.5	1.5	2.0	2.0	7.50	6.05	0.00	0.54	
SHEETMETAL WORKER	All	ALL		34.94	36.44	1.5	1.5	2.0	2.0	9.65	8.94	2.10	0.54	0.35
SPRINKLER FITTER	All	BLD		41.97	44.72	1.5	1.5	2.0	2.0	10.23	12.59	0.00	0.52	
STONE MASON	All	BLD		31.25	33.13	1.5	1.5	2.0	2.0	9.35	10.00	0.00	0.88	
TERRAZZO FINISHER	All	BLD		29.75	29.75	1.5	1.5	2.0	2.0	9.35	10.00	0.00	0.88	
TERRAZZO MASON	All	BLD		31.25	33.13	1.5	1.5	2.0	2.0	9.35	10.00	0.00	0.88	
TILE MASON	All	BLD		31.25	33.13	1.5	1.5	2.0	2.0	9.35	10.00	0.00	0.88	
TRUCK DRIVER	All	ALL	1	28.95	0.00	1.5	1.5	2.0	2.0	9.30	2.90	0.00	0.25	
TRUCK DRIVER	All	ALL	2	29.35	0.00	1.5	1.5	2.0	2.0	9.30	2.90	0.00	0.25	
TRUCK DRIVER	All	ALL	3	29.55	0.00	1.5	1.5	2.0	2.0	9.30	2.90	0.00	0.25	
TRUCK DRIVER	All	ALL	4	29.80	0.00	1.5	1.5	2.0	2.0	9.30	2.90	0.00	0.25	
TRUCK DRIVER	All	ALL	5	30.55	0.00	1.5	1.5	2.0	2.0	9.30	2.90	0.00	0.25	
TRUCK DRIVER	All	O&C		13.94	0.00	1.5	1.5	2.0	2.0	2.55	1.50	0.00	0.00	
TUCKPOINTER	All	BLD		31.25	33.13	1.5	1.5	2.0	2.0	9.35	10.00	0.00	0.88	

### **Legend**

**Rg** Region

**Type** Trade Type - All,Highway,Building,Floating,Oil & Chip,Rivers

**C** Class

**Base** Base Wage Rate

**OT M-F** Unless otherwise noted, OT pay is required for any hour greater than 8 worked each day, Mon through Fri. The number listed is the multiple of the base wage.

**OT Sa** Overtime pay required for every hour worked on Saturdays

**OT Su** Overtime pay required for every hour worked on Sundays

**OT Hol** Overtime pay required for every hour worked on Holidays

**H/W** Health/Welfare benefit

**Vac** Vacation

**Trng** Training

**Other Ins** Employer hourly cost for any other type(s) of insurance provided for benefit of worker.

## Explanations WABASH COUNTY

The following list is considered as those days for which holiday rates of wages for work performed apply: New Years Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas Day and Veterans Day in some classifications/counties. Generally, any of these holidays which fall on a Sunday is celebrated on the following Monday. This then makes work performed on that Monday payable at the appropriate overtime rate for holiday pay. Common practice in a given local may alter certain days of celebration. If in doubt, please check with IDOL.

### EXPLANATION OF CLASSES

**ASBESTOS - GENERAL** - removal of asbestos material/mold and hazardous materials from any place in a building, including mechanical systems where those mechanical systems are to be removed. This includes the removal of asbestos materials/mold and hazardous materials from ductwork or pipes in a building when the building is to be demolished at the time or at some close future date.

**ASBESTOS - MECHANICAL** - removal of asbestos material from mechanical systems, such as pipes, ducts, and boilers, where the mechanical systems are to remain.

### CERAMIC TILE FINISHER, MARBLE FINISHER, TERRAZZO FINISHER

Assisting, helping or supporting the tile, marble and terrazzo mechanic by performing their historic and traditional work assignments required to complete the proper installation of the work covered by said crafts. The term "Ceramic" is used for naming the classification only, and is in no a limitation of the product handled. Ceramic takes into consideration most hard tiles.

### COMMUNICATIONS TECHNICIAN

Installation, operation, inspection, modification, maintenance and repair of systems used for the transmission and reception of signals of any nature, for any purpose, including but not limited to, sound and voice transmission/transference systems, communication systems that transmit or receive information and/or control systems, television and video systems, micro-processor controlled fire alarm systems, and security systems, and the performance of any task directly related to such installation or service. EXCLUDES installation of electrical power wiring and conduit raceways exceeding fifteen (15) feet in length.

### ELECTRIC POWER LINEMAN

Construction, maintenance and dismantling of overhead and underground electric power lines, including high voltage pipe type cable work, and associated structures and equipment.

### ELECTRIC POWER EQUIPMENT OPERATOR - CLASS 1

Operation of all crawler type equipment D-4 and larger from the ground to assist the Electric Power Linemen in performing their duties.

### ELECTRIC POWER EQUIPMENT OPERATORS - CLASS 2

Operation of all other equipment from the ground to assist the Electric Power Linemen in performing their duties.

### ELECTRIC POWER GROUNDMAN

Applies to workers who assist the Electric Power Lineman from the ground.

**TRUCK DRIVER - BUILDING, HEAVY AND HIGHWAY CONSTRUCTION Class 1.** Drivers on 2 axle trucks hauling less than 9 ton. Air



compressor and welding machines and brooms, including those pulled by separate units, truck driver helpers, warehouse employees, mechanic helpers, greasers and tiremen, pickup trucks when hauling materials, tools, or workers to and from and on-the-job site, and fork lifts up to 6,000 lb. capacity.

Class 2. Two or three axle trucks hauling more than 9 ton but hauling less than 16 ton. A-frame winch trucks, hydrolift trucks, vactor trucks or similar equipment when used for transportation purposes. Fork lifts over 6,000 lb. capacity, winch trucks, four axle combination units, and ticket writers.

Class 3. Two, three or four axle trucks hauling 16 ton or more. Drivers on water pulls, articulated dump trucks, mechanics and working forepersons, and dispatchers. Five axle or more combination units.

Class 4. Low Boy and Oil Distributors.

Class 5. Drivers who require special protective clothing while employed on hazardous waste work. TRUCK DRIVER - OIL AND CHIP

Encompasses following types of work when participating on public works projects involving oil and chip activities: Ready Mix, Gravel Truck Drivers, Asphalt Distributor Truck and Lowboy Drivers. OPERATING ENGINEERS - BUILDING, HEAVY AND HIGHWAY CONSTRUCTION Class 1. Draglines, Derricks, Shovels, Gradalls, Mechanics, Tractor Highlift, Tournadozer, Concrete Mixers with Skip, Tournamixer, Two Drum Machine, One Drum Hoist with Tower or Boom, Cableways, Tower Machines, Motor Patrol, Boom Tractor, Boom or Winch Truck, Winch or Hydraulic Boom Truck, Tournapull, Tractor Operating Scoops, Bulldozer, Push Tractor, Asphalt Planer, Finishing Machine on Asphalt, Large Rollers on Earth, Rollers on Asphalt Mix, Ross Carrier or similar Machine, Gravel Processing Machine, Asphalt Plant Engineer, Paver Operator, Dredging Equipment, or Dredge Engineer, or Dredge Operator, Central Mix Plant Engineer, CMI or similar type machine, Concrete Pump, Truck or Skid Mounted, Engineer or Rock Crusher Plant, Concrete Plant Engineer, Ditching Machine with dual attachment, Tractor Mounted Loaders, Hydro Crane, Standard or Dinkey Locomotives, Scoopmobiles, Euclid Loader, Soil Cement Machine, Back Filler, Elevating Machine, Power Blade, Drilling Machine, including Well Testing, Caissons, Shaft or any similar type drilling machines, Motor Driven Paint Machine, Pipe Cleaning Machine, Pipe Wrapping Machine, Pipe Bending Machine, Apsco Paver, Boring Machine, (Head Equipment Greaser), Barber-Greene Loaders, Formless Paver, (Well Point System), Concrete Spreader, Hydra Ax, Span Saw, Marine Scoops, Brush Mulcher, Brush Burner, Mesh Placer, Tree Mover, Helicopter Crew (3), Piledriver-Skid or Crawler, Stump Remover, Root Rake, Tug Boat Operator, Refrigerating Machine, Freezing Operator, Chair Cart- Self-Propelled, Hydra Seeder, Straw Blower, Power Sub Grader, Bull Float, Finishing Machine, Self-Propelled Pavement Breaker, Lull (or similar type Machine), Two Air Compressors, Compressors hooked in Manifold, Chip Spreader, Mud Cat, Sull-Air, Fork Lifts (except when used for landscaping work), Soil Stabilizer (Seaman Tiller, Bo Mag, Rago Gator, and similar types of equipment), Tube Float, Spray Machine, Curing Machine, Concrete or Asphalt Milling Machine, Snooper Truck-Operator, Backhoe, Farm Tractors (with attachments), 4 Point Lift System (Power Lift or similar type), Skid-Steer (Bob Cat or similar type), Wrecking Shears, Water Blaster.

Class 2. Concrete Mixers without Skips, Rock Crusher, Ditching Machine under 6', Curbing Machine, One Drum Machines without Tower or Boom, Air Tugger, Self-Propelled Concrete Saw, Machine Mounted Post Hole Digger, two to four Generators, Water Pumps or Welding Machines, within 400 feet, Air Compressor 600 cu. ft. and under, Rollers on Aggregate and Seal Coat Surfaces, Fork Lift (when used for landscaping work), Concrete and Blacktop Curb Machine, One Water Pump, Oilers, Air Valves or Steam Valves, One Welding Machine, Truck Jack, Mud Jack, Gunnite Machine, House Elevators when used for hoisting material, Engine Tenders, Fireman, Wagon Drill, Flex Plane, Conveyor, Siphons and Pulsometer, Switchman, Fireman on Paint Pots, Fireman on Asphalt Plants, Distributor Operator on Trucks, Tampers, Self-Propelled Power Broom, Striping Machine (motor driven), Form Tamper, Bulk Cement Plant, Equipment Greaser, Deck Hands, Truck Crane Oiler-Driver, Cement Blimps, Form Grader, Temporary Heat, Throttle Valve, Super Sucker (and similar type of equipment).

Class 3. Power Cranes, Truck or Crawler Crane, Rough Terrain Crane (Cherry Picker), Tower Crane, Overhead Crane.

OPERATING ENGINEER - OIL AND CHIP

Encompasses following types of work when participating on public works projects involving oil and chip activities: Spreading and compaction of seal coat aggregate on liquid asphalt or road oil and the preparation for such work for maintenance purposes.

#### Other Classifications of Work:

For definitions of classifications not otherwise set out, the Department generally has on file such definitions which are available. If a task to be performed is not subject to one of the classifications of pay set out, the Department will upon being contacted state which neighboring county has such a classification and provide such rate, such rate being deemed to exist by reference in this document. If no neighboring county rate applies to the task, the Department shall undertake a special determination, such special determination being then deemed to have existed under this determination. If a project requires these, or any classification not listed, please contact IDOL at 217-782-1710 for wage rates or clarifications.

#### LANDSCAPING

Landscaping work falls under the existing classifications for laborer, operating engineer and truck driver. The work performed by landscape plantsman and landscape laborer is covered by the existing classification of laborer. The work performed by landscape operators (regardless of equipment used or its size) is covered by the classifications of operating engineer. The work performed by landscape truck drivers (regardless of size of truck driven) is covered by the classifications of truck driver.

- On August 7, 2018, IDOL published changes to the HT/Frost Insulator classification in Alexander County, the Sheetmetal Worker classification in Alexander, Bond, Clay, Clinton, Crawford, Edwards, Effingham, Fayette, Franklin, Gallatin, Greene, Hamilton, Hardin, Jackson, Jasper, Jefferson, Jersey, Johnson, Lawrence, Macoupin, Madison, Marion, Massac, Monroe, Montgomery, Perry, Pope, Pulaski, Randolph, Saline, St. Clair, Union, Wabash, Washington, Wayne, White, and Williamson Counties, and the Iron Worker trade in Richland County.

DIVISION 01 - GENERAL REQUIREMENTS  
**01 11 00 - Project Summary**

1. GENERAL

1.01 DESCRIPTION

A. MT. CARMEL CITY HALL ADDITION/REMODEL  
MT. CARMEL, ILLINOIS

B. SCOPE OF WORK: The scope of this project includes but is not necessarily limited to the construction of a new one story council room addition with toilets on a concrete slab with masonry exterior walls (base bid), wood stud walls and a wood truss roof.

C. Contracts shall be let for the following work:

CONTRACT NO. 1. - GENERAL CONSTRUCTION

D. EXISTING CONDITIONS:

As the Mt. Carmel City Hall will remain open with services and business during this project, it will be the responsibility of the Contractor/s to coordinate the work schedule with the Owner to provide the least amount of interference as possible. The Contractor/s will be ultimately responsible for the protection of the public from injury due to construction and demolition work being performed on the site.

E. Work by Others: additional projects by others are not anticipated during this work.

F. EXAMINATION OF DRAWINGS, SPECIFICATIONS & PREMISES:

Prior to submitting his Bid, each Bidder will be held to have examined the premises and have fully acquainted himself with the existing conditions under which he will be obliged to operate and conduct the work. He will further be held to have thoroughly examined all drawings and to have read the General Conditions, the Supplemental Conditions and all of the Specifications which may in any manner affect the work under this contract. Failure to fully acquaint himself with existing conditions or the amount of work involved will NOT be considered subsequently as a basis for extra compensation.

G. Duties:

1. The General Contractor except as specifically noted, shall provide and pay for, as called for in order to perform the work of their Contract:

- a. Labor, materials and equipment, tools, construction equipment and machines.
- b. Other facilities and services necessary for proper execution and completion of work.
- c. Comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities which bear on performance of work.

H. Permits: As required for the completion of the work of specific Contracts, secured and paid for by the Contractor.

I. Use of Premises: Do not unreasonably encumber site with materials or equipment, or load structure with weight that will endanger the structure. Assume full responsibility for protection and safekeeping of products.

## SECTION 01 11 00-2

- J. The General Contractor shall protect existing construction from damage or wear from new construction. Any existing construction disturbed by new work shall be repaired or replaced to match the existing conditions.

### 1.02 COORDINATION

- A. The General Contractor shall schedule, manage and expedite all work under his contract, coordinating his work with all other Sub-Contractors and trades so that no conflicts of timing or location occur.
- B. The General Contractor shall ultimately be responsible for the coordination of the work of all contracts, subcontractors and trades, and coordinating the work schedule with the Owner.
- C. Keep Architect/Engineer informed on the progress of work.
  - 1. Close or cover no work until duly inspected and approved.
  - 2. Uncover uninspected work and, after approval, repair and/or replace all work at no cost to the Owner.
  - 3. Notify Architect/Engineer and Owner at least seven (7) days in advance of utility connections, utility shutoff, mechanical equipment and oil line cut overs, street or alley closings to allow ample time to receive Owner's written approval or procedure to be followed.
  - 4. Coordinate these operations with the Owner and complete same in the minimum amount of time.
- D. Protection:
  - 1. Do not close or obstruct streets, entrance drives, sidewalks, or other facilities without permission of the Owner and local authorities.
  - 2. Furnish, erect and maintain barricades, warning light, signs, and guards as may be required.
- E. Smoking Policy:
  - 1. Smoking and smokeless tobacco are not allowed on the property.

### 1.03 JOB SIGN

- A. The General Contractor shall furnish and erect a job sign as specified herein:
  - 1. Job sign shall be 4'- 0" in height and 8'- 0" in length, constructed of one 3/4" sheet of plywood horizontally, supported by 4" x 4" pressure treated wood posts, set in the ground in compacted post holes. Provide bracing as required. Bottom of job sign to be at 3'- 0" above grade.
  - 2. Sign background shall be white with a black border.
  - 3. Lettering shall be black, containing the following information:

SECTION 01 11 00-3

Project name  
Owner's name  
Architect/Engineer - name and logo  
General Contractor - name and logo

- B. Erect the job sign as soon as possible following execution of a construction contract.
- C. The job sign shall be installed on the construction site, in full and convenient view, yet clear of construction activities.
- D. Protect sign from damage during the entire project. If necessary, relocate and re-install sign for convenience.
- E. Clean sign as required.

END

01 11 00-3

DIVISION 01 - GENERAL REQUIREMENTS  
**Section 01 23 00 - Alternate Bids**

1. GENERAL

1.01 PROJECT MANUAL

- A. All applicable requirements of the Project Manual apply to this Section.

1.02 GENERAL REQUIREMENTS

- A. Alternate Bids: There is one required Alternate Bid. Additions and Deductions shall include any modifications of work or additional work that the Contractor may be required to perform by reason of acceptance of the Alternates. During the life of the Contract, any Alternate Bid may be accepted or rejected by the Owner for the sum established.
- B. Voluntary Alternates may be submitted by Bidders. Voluntary Alternates, if accepted, shall be performed as directed by the Architect. They shall be submitted in letter form on the Bidder's business stationery, shall be signed by the same individual(s) signing the Proposal Form and shall be accompanied by sufficient technical data to permit a factual evaluation on the Voluntary Alternate Product(s).

1.03 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. All applicable requirements of the Project Manual, including the Bidding Requirements, General and Supplementary Conditions and General Requirements, apply to this section.
- B. This section describes the changes to be made under Alternate Bids, if applicable.
- C. Coordinate pertinent related work and modify the surrounding work as required to complete the project under each Alternative designated in the Owner-Contractor Agreement.

1.04 DESCRIPTION OF ALTERNATE BIDS

- A. Alternate Bid AB-1:  
Contractor to delete exterior concrete masonry unit wall above finish floor (east and south walls) and replace with new 2x6 exterior stud wall with 7/16" sheathing and 5.5" fiberglass insulation. Delete interior inside perimeter 2x4 stud wall and insulation.

END

01 23 00-1

DIVISION 01 - GENERAL REQUIREMENTS  
**Section 01 24 00 - Cutting and Patching**

1. GENERAL

1.01 SECTION INCLUDES

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

1.02 RELATED SECTIONS

- A. Section 01 11 00 - Project Summary.

1.03 SUBMITTALS

- A. Submit written request in advance of cutting or alteration which affects:

- 1. Structural integrity of any element of Project.
- 2. Integrity of weather-exposed or moisture-resistant element.
- 3. Efficiency, maintenance, or safety of any operational element.
- 4. Visual qualities of sight exposed elements.

- B. Include in request:

- 1. Identification of Project.
- 2. Location and description of affected work.
- 3. Necessity for cutting or alteration.
- 4. Description of proposed work, and products to be used.
- 5. Alternatives to cutting and patching.
- 6. Effect on work of Owner.
- 7. Date and time work will be executed.

2. PRODUCTS

2.01 MATERIALS

- A. Primary Products: Those required for original installation.
- B. Product Substitution: Under provisions of Section 01 26 00.

3. EXECUTION

3.01 EXAMINATION

- A. Inspect existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching.

01 24 00-1

## SECTION 01 24 00-2

- B. After uncovering existing work, inspect conditions affecting performance of work.
- C. Beginning of cutting or patching means acceptance of existing conditions.

### 3.02 PREPARATION

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

### 3.03 CUTTING AND PATCHING

- A. Execute cutting, fitting, and patching including excavation and fill to complete work.
- B. Fit products together, to integrate with other work.
- C. Uncover work to install ill-timed work.
- D. Remove and replace defective or non-conforming work.
- E. Provide openings in the work for penetration of mechanical and electrical work.

### 3.04 PERFORMANCE

- A. Execute work by methods to avoid damage to other work, and which will provide appropriate surfaces to receive patching and finishing.
- B. Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- C. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- D. Restore work with new products in accordance with requirements of Contract Documents.
- E. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- F. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated sealant or other suitable material, to full thickness of the penetrated element.
- G. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.



DIVISION 1 - GENERAL REQUIREMENTS  
**Section 01 25 00 - Remodeling Project Procedures**

1. GENERAL

1.01. SECTION INCLUDES

- A. The Contractor shall perform demolition and remodeling work as indicated on the plans and as required to complete the new construction as indicated, including:

1. Coordinate work of employees and subcontractors.
2. Schedule elements of remodeling and renovation work to expedite completion.
3. Schedule noisy or hazardous work to avoid problems with the Owner's operations.
4. In addition to demolition specified and shown on drawings, cut, move or remove existing construction to provide access or to allow remodeling and new work to proceed.

Include:

- a. Repair or remove hazardous or unsanitary conditions.
  - b. Remove abandoned piping, conduit and wiring.
  - c. Remove unsuitable or extraneous materials not marked for salvage, such as abandoned furnishings and equipment, and debris such as rotted wood, rusted metals and deteriorated concrete.
  - d. Clean surfaces. Remove surface finishes to install new work and finishes.
5. Patch, repair and refinish existing items to remain, to the specified condition for each material, with a neat transition to adjacent new construction.

1.02. RELATED SECTIONS

- A. Section 01 24 00 - Cutting and Patching.

1.03 SEQUENCE AND SCHEDULES

- A. Show detailed subschedule for alteration work with Construction Schedule.

1.04 ALTERATIONS, CUTTING AND PROTECTION

- A. Cut finish surfaces such as masonry, tile, plaster or metals, by methods to terminate surfaces in a straight line at a natural point of division.
- B. Protect existing and new work from weather and temperature extremes.
1. Maintain existing interior work above 60° F.
  2. Provide weather protection, waterproofing, heat and humidity control to prevent damage to remaining existing work and to new work.
- C. Provide temporary enclosures to separate work areas from existing building and from areas occupied by the Owner, and to provide protection.

## SECTION 01 25 00-2

1. Interior Enclosure: Provide temporary partitions and ceilings as required to separate work areas from Owner occupied areas, to prevent penetration of dust and moisture into Owner occupied areas and to prevent damage to existing materials and equipment.
2. Ventilation of Project Area: The Contractor shall be responsible for providing temporary ventilation of the project areas during construction operations.
- D. Items of construction, furnishings and articles having a historic or private value discovered during progress of the work shall remain in the owner's possession.
  1. Protect items from damage from weather and work.
  2. Store items to be retained by owner in a safe, dry place on site. Dispose of items which the Owner releases.

## 2. PRODUCTS

### 2.01 SALVAGED MATERIALS

- A. Salvage sufficient quantities of cut or removed materials to replace damaged work, when material is not readily obtainable on current market.

### 2.02. MATERIALS FOR PATCHING, EXTENDING AND MATCHING

- A. Ensure that work is complete:
  1. Provide same materials or types of construction as that in existing structure, to patch, extend or match existing work.

## 3. EXECUTION

### 3.01. REMOVE EXISTING CONSTRUCTION

- A. Temporary Removals:
  1. Remove and reinstall original flooring and ceilings to match existing construction.

### 3.02 PERFORMANCE

- A. Patch and extend existing work using skilled craftsmen capable of matching existing quality of workmanship. For patched or extended work, provide quality equal to that specified for new work.

### 3.03 ADJUSTMENTS

- A. Where partitions are removed, patch floors, walls and ceilings with finish materials to match existing as closely as possible.
  1. Where removal of partitions results in adjacent spaces becoming one, re-work floors and ceilings to provide smooth planes without breaks, steps or bulkheads.
- B. Trim and refinish existing doors to clear new floors.

## SECTION 01 25 00-3

### 3.04 DAMAGED SURFACES

- A. Patch and replace all portions of existing finished surfaces found to be damaged, lifted, discolored or showing other imperfections, with matching material.
  - 1. Refinish patched portions of painted or coated surfaces in a manner to produce uniform color and texture over entire surface.
  - 2. When existing surface cannot be matched, refinish entire surface to nearest intersections.

### 3.05 TRANSITION FROM EXISTING TO NEW WORK

- A. When new work abuts or finishes flush with existing work, make a smooth transition. Patched work shall match existing adjacent work in texture and appearance.

### 3.06 CLEANING

- A. Perform construction cleaning as specified.
  - 1. Clean Owner occupied areas daily.
  - 2. Clean all spillage, overspray and heavy dust collections in Owner occupied areas immediately.
- B. At completion of work of each craft, clean area and make surfaces ready for work of successive crafts.
- C. At completion of alterations work in each area, provide final cleaning and return space to a condition suitable for use of Owner.

DIVISION 01 - GENERAL REQUIREMENTS  
**Section 01 26 00 - Substitution Procedures**

1. GENERAL

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Substitutions During Bidding: Instructions to Bidders.

1.02 PRODUCTS LIST

- A. Within thirty (30) days after date of contract, submit to Architect/Engineer five (5) copies of complete list of all products which are proposed for installation.
- B. Tabulate list of each specification section.
- C. For products specified under reference standards, include with listing of each product:
  - 1. Name and address of manufacturer.
  - 2. Trade name.
  - 3. Model or catalog designation.
  - 4. Manufacturer's data:
    - a. Performance and test data.
    - b. Reference standards.

1.03 CONTRACTOR'S OPTIONS

- A. For products specified only by reference standards, select any product meeting standards, by any manufacturer.
- B. For products specified by naming several products or manufacturers, select any product and manufacturer named.
- C. For products specified by naming only one product and manufacturer, but containing a paragraph referring to Substitutions, Section 01 26 00, select any product equal to or exceeding the standards of the product listed. Adhere to the instructions for substituted products.
- D. For products specified by naming only one product and manufacturer, there is no option, and no substitution will be allowed.

1.04 SUBSTITUTIONS

- A. During bidding, Architect/Engineer will consider written requests from prime bidders for substitutions, received at least ten (10) days prior to bid date. Requests received after that time will not be considered.
- B. Within thirty (30) days after date of contract, Architect/Engineer will consider formal requests from Contractor for substitution of products in place of those specified.

SECTION 01 26 00-2

- C. Submit five (5) copies of request for substitution. Include in request:
  - 1. Complete data substantiating compliance of proposed substitution with Contract Documents.
    - a. Manufacturer's Literature:
      - (1) Product description
      - (2) Performance and test data
  - 2. For construction methods:
    - a. Detailed descriptions of proposed method.
    - b. Drawings illustrating methods.
- D. In making request for substitution, Bidder/Contractor represents:
  - 1. He has investigated proposed product or method and determined that it is equal or superior in all respect to the product specified.
  - 2. He will provide the same guarantee for substitution in comparison with product or method specified.
  - 3. He will coordinate installation of accepted substitution into work, making changes as may be required for work to be complete in all respects.
  - 4. He waives all claims for additional costs related to substitution which consequently become apparent.
- E. Substitutions will not be considered if:
  - 1. They are indicated or implied on shop drawings or project data submittals without formal request submitted in accord with this section.
  - 2. Acceptance will require substantial revision of Contract Documents.

DIVISION 01 - GENERAL REQUIREMENTS

**Section 01 33 23 - Shop Drawings, Product Data & Samples**

**1. GENERAL**

**1.01 DESCRIPTION**

- A. Submit to the Architect/Engineer shop drawings, catalog cuts, product data and samples required by Specification sections or requested otherwise on the drawings.
- B. Submit five (5) copies of required submittals as indicated in related specification sections. Any building components different than as specified require shop drawings. Additional copies in excess of five will be discarded by the Architect/Engineer. In lieu of hard copy submittals, the Contractor may submit to the Architect electronically for ease and/or expedition. Electronically transmitted documents must be legible and may be rejected by the Architect for illegibility at their discretion, and may be required to be resubmitted as a hard copy. Sample submittals may not be transmitted electronically, including color selections.
- C. Drawings, prepared by Contractor, Supplier or Distributor, which illustrate some portion of the work, showing fabrication, layout, setting or erection details.

**1.02 PRODUCT DATA:** Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data, five (5) copies each.

**1.03 CONTRACTOR RESPONSIBILITIES**

- A. REVIEW shop drawings, product data and samples PRIOR to submission. Verify Field Measurements and field construction criteria. Provide catalog numbers and similar data.
- B. Contractor's responsibility for errors and omissions in submittals is not relieved by Architect/Engineer's review of submittals.
- C. Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by Architect/Engineer's review of submittals, unless Architect/Engineer gives written acceptance of specified deviations.
- D. Notify Architect/Engineer in writing at time of submission of deviations in submittals from requirements of Contract Documents.
- E. Begin no work which requires submittals until return of submittals with Architect/Engineer's stamp and initials or signature indicating review.
- F. Submittals shall include:
  - 1. Notification of deviations from Contract Documents.
  - 2. Identification of product or materials.
  - 3. Relation to adjacent structure or materials.
  - 4. Field dimensions, clearly identified as such.
  - 5. Specification section number.

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6. Applicable standards, such as ASTM number of Federal Specification.
7. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of field measurements and compliance with contract Documents.

END

01 33 23-2

DIVISION 1 - GENERAL REQUIREMENTS  
**Section 01 41 00 - Regulatory Requirements**

**1. GENERAL**

**1.01 REQUIREMENTS INCLUDE**

- A. The General Contractor comply with all laws, rules and regulations governing the work.
1. When Contractor observes that contract documents are at variance with specified codes, notify Architect/Engineer in writing immediately. Architect/Engineer will process changes in accord with General Conditions.
  2. When Contractor performs any work knowing or having reason to know that the work is contrary to such laws, rules and regulations and fails to so notify the Architect/Engineer, Contractor shall pay all costs arising therefrom. However, it will not be the Contractor's primary responsibility to make certain that the contract documents are in accord with such laws, rules and regulations.

**1.02 DEFINITIONS & ABBREVIATIONS**

A. Definitions:

1. Dates: Reference Codes, Regulations and Standards are the issue current at date of bidding documents unless otherwise specified.
2. Codes: Codes are rules, regulations or statutory requirements of government agencies.
3. Standards: Standards are requirements set by authorities, custom or general consent and established as accepted criteria.

B. Abbreviations:

- |           |   |
|-----------|---|
| 1. ADA    | Americans with Disabilities Act   |
| 2. ANSI   | American National Standards Institute                                     |
| 3. ASHRAE | American Society of Heating, Refrigeration and Air-Conditioning Engineers |
| 4. ASTM   | American Society for Testing and Materials                                |
| 5. CDB    | Capital Development Board   |
| 6. FED    | Federal Agencies  |
| 7. FM     | Factory Mutual Engineering Corp   |
| 8. IBC    | International Building Code   |
| 9. IDOL   | Illinois Department of Labor  |
| 10. IDPH  | Illinois Department of Public Health                                      |
| 11. IEPA  | Illinois Environmental Protection Agency                                  |
| 12. IDPR  | Illinois Department of Professional Regulation                            |
| 13. NFPA  | National Fire Protection Association                                      |
| 14. OSFM  | Office of State Fire Marshal  |
| 15. SOS   | Secretary of State  |
| 16. UL    | Underwriters Laboratories, Inc.   |

**1.03 QUALITY ASSURANCE**



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- A. Architect/Engineer has designed the project with full knowledge of code requirements and has copies of all specified codes available for Contractor's inspection.
- B. Contractor:
  - 1. Ensure that copies of specified codes and standards are readily available to Contractor's personnel. Copies are available at Contractor's expense from source or publisher.
  - 2. Ensure that Contractor's personnel are familiar with workmanship and installation requirements of specified codes and standards.

### 1.04 REGULATORY REQUIREMENTS

- A. Source and requirements:
  - 1. CDB:
    - a. Illinois Accessibility Code.
    - b. Illinois Energy Conservation Code.
  - 2. FED:
    - a. DHEW:
      - 1) Title V: Handicapped Accessibility.
      - b. ADA 1990
  - 3. State of Illinois:
    - a. Illinois Steel Products Procurement Act, as amended (30 ILCS 565/1 et seq.).
    - b. Illinois Purchasing Act, as amended (30 ILCS 505/1 et. seq.)
  - 4. IDOT:
    - a. Standard Specifications for Road and Bridge Construction, including all supplements, Jan 1, 2019, except where otherwise specified.
      - 1) Change all references to "Engineer" to "Architect/Engineer".
      - 2) References to "Method of Measurement" and "Basis of Payment" do not apply.
  - 5. IDPH:
    - a. Illinois State Plumbing Code.
  - 6. IDPR: Illinois Roofing Industry Licensing Act, as amended (225 ILCS 335/1 et. seq.).
  - 7. IEPA :
    - a. Air Pollution Standards.
    - b. Noise Pollution Standards.
    - c. Water Pollution Standards.
  - 8. OSFM:

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- a. Illinois Rules and Regulations for Fire Prevention and Safety, NFPA 101-2000 (new construction), NFPA 101-2000 (existing construction) Except Illinois State Board of Education.

9. STANDARDS:

- a. ANSI No. C-2, National Electrical Safety Code,
- b. ASHRAE No. 62, Standard for Natural and Mechanical Ventilation.

10. NFPA: National Fire Codes

- a. 70, National Electrical Code
- b. 72, National Fire Alarm Code
- c. 101, Life Safety Code

11. IBC:

- a. 2015 International Building Code

- B. The Architect/Engineer may reference other codes or standards throughout the Project Manual when deemed appropriate for proper compliance with regulatory requirements.

DIVISION 01 - GENERAL REQUIREMENTS  
**Section 01 45 23 - Construction Tests**

**1. GENERAL**

**1.01 REQUIREMENTS INCLUDE**

- A. The General Contractor shall provide and pay for specified testing services including:
  - 1. Fill material for compaction at foundations.
  - 2. Base materials for compaction under concrete.
  - 3. Concrete testing for strength, slump, composition.
    - a. Concrete footings and foundations, concrete paving, concrete floors, equipment bases and foundations.
    - b. Provide three test concrete cylinders for each 50 cu. yds. of pour and for each separate pour less than 50 cu. yds.
- B. The General Contractor or Mechanical Subcontractor, shall provide:
  - 1. Testing of domestic water system.
  - 2. Testing of sanitary sewer system.
  - 3. Testing of gas piping system.
- C. The General Contractor or Electrical Subcontractor, shall provide:
  - 1. Testing of complete, grounded electrical systems.

**1.02 TESTING LABORATORY**

- A. Testing shall be performed by a qualified testing facility engaged in providing such services.
- B. Perform specified inspections, sampling and testing of materials and construction methods.
- C. Maintain a record of all sampling and testing performed. Promptly notify the Architect and Contractor of irregularities or deficiencies of work which are observed during the performance of services.
- D. Submit two (2) copies of all test reports to the Architect/Engineer.
- E. Re-test materials failing to meet specifications at no cost to the Owner.

**1.03 GENERAL CONTRACTOR**

- A. Notify the Testing Laboratory sufficiently in advance of operations to allow for it's assignment of personnel and scheduling of tests.
- B. Furnish product mix design to meet or exceed contract requirements.
- C. Pay all costs for testing services.

END

01 45 23-1

DIVISION 01 - GENERAL REQUIREMENTS  
**Section 01 66 00 - Product Delivery, Storage and Handling**

1. GENERAL

1.01 DESCRIPTION: Material Delivery, Storage and Handling at the Job Site.

1.02 DELIVERY

- A. Deliver materials, supplies or equipment to project site during working hours.
- B. Deliveries made during other than normal working hours must be received by an authorized agent of the respective Contractor or be received by other means which shall be the sole responsibility of the Contractor.
- C. No employee of the Owner is authorized to receive any shipment designated for this project.
- D. The Owner assumes no responsibility for receiving any shipment designated for this project.
- E. The respective Contractor shall be responsible for accounting for materials delivered in the presence of any Owner's representative.
- F. Under no circumstances may shipments be directed to or in care of the Owner.

1.03 STORAGE

- A. Store materials on site as recommended by the manufacturer.
- B. Store materials as not to interfere with other Contractors, Sub-contractors, trades and equipment.
- C. Take necessary means to assure that stored materials are protected from damage due to the site, weather or adjacent construction.

1.04 HANDLING

- A. Each Contractor, Subcontractor, Manufacturer or Supplier shall identify, ship, address, consign, etc., such materials to the respective Contractor, who shall be charged therewith.
- B. Give name of Contractor, name of project, street or post office address, city and zip code.

END

01 66 00-1

DIVISION 1 - GENERAL REQUIREMENTS  
**01 74 00 - Final Cleaning**

1. GENERAL

1.01 REQUIREMENTS INCLUDE

- A. General Contractor: Provide final cleaning.
  - 1. At completion of work, or at such other times as directed by the Architect, remove all waste, debris, rubbish, tools, equipment, machinery and surplus materials. Clean all sight exposed surfaces; leave work clean and ready for occupancy.
- B. General Contractor:
  - 1. Supervise and coordinate the cleaning operations of all Assigned Contractors.
  - 2. At project completion, leave project clean, ready for occupancy.

2. PRODUCTS

- 2.01 None.

3. EXECUTION

3.01 FINAL CLEANING

- A. Employ experienced workmen for final cleaning.
- B. Remove grease, dust, dirt, stains, labels, fingerprints, protection and other foreign materials from sight-exposed interior and exterior finished surfaces; polish surfaces so designated to specified finish.
  - 1. In preparation for substantial completion or occupancy, conduct final inspection of sight-exposed interior and exterior surfaces, and of concealed spaces to ensure performance
- C. Repair, patch and touch-up marred surfaces to specified finish, to match adjacent surfaces.
- D. General Contractor soft broom all exposed concrete surfaces clean; other paved areas with soft or stiff broom as directed. Rake clean other affected surfaces on grounds.
- E. General Contractor sweep and mop clean all vinyl flooring.
- F. General Contractor vacuum clean all carpet.
- G. General Contractor maintain finally cleaned areas until project, or designated portion thereof, is accepted by Owner.

DIVISION 01 - GENERAL REQUIREMENTS  
**Section 01 77 19 - Project Closeout**

1. GENERAL

- 1.01 DESCRIPTION: Deliver to the Architect/Engineer for transmission to Owner, the following described submittals. Guarantee all work, materials and equipment for one year after issuance of Certificate of Substantial Completion.
- 1.02 SUBMITTALS
- A. Certificate of Substantial Completion, issued by the Architect.
  - B. Release or Waiver of Liens: Per General Conditions, Article 9.
  - C. Contractor's Release of Surety.
  - D. Guarantees: The General Contractor agrees to make good all damage to the construction of building or site, or equipment which, in the opinion of the Architect is a result of, or incidental to, the use of materials, equipment, or workmanship which are inferior, defective or not in accordance with the drawings and specifications.
  - E. Record Drawings: The General Contractor shall: Keep up-to-date one (1) set of prints on the project at all times with all recorded information, changes, errors, deviations, omissions and all corrections noted plainly thereon. Submit Record Drawings to the Architect/Engineer prior to certification of final payment.
  - F. Completion of Punch List items as verified by the Architect.
  - G. Deliver to the Architect executed warranty and bonds.
  - H. The General Contractor shall compile and deliver to the Architect/Engineer for approval, two (2) Operation and Maintenance manuals containing product data related to the operation and maintenance of products and equipment provided under his Contract.
  - I. The General Contractor shall instruct the Owner's designated personnel on the operation and maintenance of building systems and components.

SECTION 01 77 19-2

- 1.03 OUTLINE OF CLOSING REQUIREMENTS: The following is an outline normally used by the Architect/Engineer to satisfy final and retainage payments.

FINAL DRAW

\_\_\_\_\_ Certificate of Substantial Completion  
\_\_\_\_\_ Lien Waivers  
\_\_\_\_\_ Release of Surety  
\_\_\_\_\_ Systems Instructions

RETAINAGE DRAW

\_\_\_\_\_ Guarantees  
\_\_\_\_\_ Record Drawings  
\_\_\_\_\_ Completed Punch List  
\_\_\_\_\_ Warranty Information  
\_\_\_\_\_ Operation and Maintenance Manuals

END

01 77 19-2

DIVISION 01 - GENERAL REQUIREMENTS  
**Section 01 78 23 - Operating & Maintenance Data**

1. GENERAL

1.01 REQUIREMENTS INCLUDE

- A. The General Contractor provide two (2) Operating and Maintenance Data Manuals in accordance with the Project Manual.

2. REQUIRED SUBMITTALS

2.01 General Contractor

A. Required Submittal Information:

- 1. Product data
- 2. Manufacturer's instructions for maintenance, and service and care
- 3. Shop drawings
- 4. Warranties & bonds

B. Required Sections for Submittals:

- 1. Section 07 24 00 - Exterior Insulation Finishing System
- 2. Section 07 42 13 - Metal Wall Panels
- 3. Section 08 11 00 - Metal Doors and Frames
- 4. Section 08 14 00 - Wood Doors
- 5. Section 08 71 00 - Door Hardware
- 6. Section 10 28 13 - Toilet Accessories
- 7. Section 10 44 16 - Fire Extinguishers

C. Required Divisions for Submittals for Fixtures and Equipment:

- 1. Division 22 - Plumbing
- 2. Division 23 - HVAC
- 3. Division 26 - Electrical

END

01 78 23-1



DIVISION 01 - GENERAL REQUIREMENTS  
**Section 01 78 36 - Warranties and Bonds**

1. GENERAL

1.01 REQUIREMENTS INCLUDE

- A. The General Contractor shall warrant their work for one (1) year from substantial completion in accordance with Section 01 77 19. In addition, the following extended Warranties and Bonds shall be provided as specified.

2. EXTENDED WARRANTIES AND BONDS

2.01 General Contractor

- A. Section 07 24 00 - Exterior Insulation Finishing System
  - 1. Standard five (5) year manufacturer's warranty.
  - 2. Standard five (5) year installation warranty.
- B. Section 07 42 13 - Metal Wall Panels
  - 1. General Contractor's two (2) year weathertight warranty.
  - 2. Manufacturer's standard twenty (20) year finish warranty
- C. Section 07 50 00 - PVC Membrane Roofing
  - 1. Standard twenty (20) year manufacturer's weathertight warranty.
- D. Section 07 61 00 - Metal Roof Coping
  - 1. Five (5) year manufacturer's watertight warranty.
  - 2. Manufacturer's standard twenty (20) year finish warranty.
- E. Section 07 71 23 - Aluminum Fascia, Soffit, Gutters and Downspouts
  - 1. Manufacturer's standard twenty (20) year finish warranty.
- F. Section 08 11 00 - Metal Doors and Frames
  - 1. Manufacturer's standard five (5) year warranty.
- G. Section 08 14 00 - Wood Doors
  - 1. Manufacturer's standard five (5) year warranty.
- H. Section 08 51 13 - Aluminum Windows
  - 1. Manufacturer's standard ten (10) year warranty.

SECTION 01 78 36-2

I. Section 08 71 00 - Door Hardware

1. Manufacturer's standard five (5) year warranty.

J. Section 08 80 00 - Glazing

1. Manufacturer's standard ten (10) year warranty for loss of seal/delamination.

K. Section 09 65 13 - Resilient Base and Accessories

1. Free of manufacturing defects for five (5) years.

L. Section 09 65 16 - Resilient Plank Vinyl Flooring

1. Manufacturer's limited ten (10) year warranty.

M. Section 12 36 61 - Solid Surfacing Window Sills

1. Ten (10) year manufacturer's warranty. Defects in material/workmanship.

N. Division 22 - Plumbing

1. Submit manufacturer's standard warranties for fixtures and equipment.

O. Division 23 - HVAC

1. Submit manufacturer's standard warranties for fixtures and equipment.

P. Division 26 - Electrical

1. Submit manufacturer's standard warranties for fixtures and equipment.

END

01 78 36-2

DIVISION 1 - GENERAL REQUIREMENTS  
**01 78 39 - Project Record Documents**

**1. GENERAL**

**1.01 REQUIREMENTS INCLUDE:**

**A. General Contractor:**

1. At project site, maintain one record copy of:
  - a. Contract Drawings, including separate volume of details.
  - b. Project Manual.
  - c. Interpretations and supplemental instructions.
  - d. Addenda.
  - e. Reviewed, approved shop drawings and product data.
  - f. Other modifications to Contract.
  - g. Field test records.
  - h. All schedules.
  - i. Correspondence file.
2. Store documents apart from documents used for field construction.
3. File documents in format in accord with Project Manual Table of Contents.
4. Do not use record documents for field construction purposes.
5. Make documents available at all times for inspection by Architect/Engineer.

**1.02 RELATED SECTIONS**

- A. Section 01 33 23 - Shop Drawings, Product Data and Samples.
- B. Section 01 78 36 - Warranties & Bonds.

**1.03 RECORDING**

- A. Label each document "PROJECT RECORD DOCUMENTS" in 2" high printed letters.
- B. Keep record documents current.
- C. Do not permanently conceal any work until specified information has been recorded.
- D. Contract Drawings: Legibly mark to record actual construction.
  1. Depths of various elements of foundation in relation to first floor level.
  2. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
  3. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
  4. Field changes of dimension and detail.

## SECTION 01 78 39-2

5. Changes made by change order.
  6. Details not on original Contract Drawings.
- E. Specifications and addenda: Legibly mark up each section to record:
1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.
  2. Changes made by change order or field order.
  3. Other matters not originally specified.
- F. Shop drawings: Maintain as record documents; legibly annotate drawings to record changes made after review.
- G. Architect will periodically review documents to confirm they are up-to-date. Contractor payment may be withheld or reduced if record documents are not current.

### 1.04 SUBMITTAL

- A. At completion of project, deliver record documents to Architect/Engineer.
- B. Accompany submittal with transmittal letter, in duplicate, containing:
1. Date, project title and number.
  2. Contractor's name and address.
  3. Certification that each document submitted is complete and accurate.
  4. Signature of contractor, or his authorized representative.

END

01 78 39-2

DIVISION 02 - EXISTING CONDITIONS  
**Section 02 41 00 - Demolition**

1. GENERAL

1.01 SECTION INCLUDES

A. Base Bid, General Contractor provide:

1. Removal of existing construction to limits as indicated and specified herein. Demolition includes the complete or partial removal and disposal of materials. The building, structures and items to be removed include, but shall not be limited to the following:
  - a. Complete entrance canopy roof, columns and concrete slab.
  - b. Exterior windows.
  - c. Exterior wall sections, interior and exterior finishes.
2. Removal of existing construction by Alternate Bid as follows:
  - a. Interior doors, frames and hardware.
  - b. Interior walls.
  - c. Interior finish flooring.
  - d. Toilet room partitions and accessories.
  - e. Plumbing fixtures and piping.

1.02 RELATED SECTIONS

A. Specified elsewhere:

1. Division 26 - Electrical Requirements.

1.03 SUBMITTALS

A. Schedule of demolition:

1. Submit proposed methods and operations of demolition for review prior to the start of work. Include in the schedule the coordination for shutoff, capping, and continuation of utility services as required, together with details for dust, noise, and erosion control protection.
2. Provide a detailed sequence of demolition and removal work to ensure the uninterrupted progress of Owner's operation.

2. PRODUCTS

2.01 SALVAGE OF MATERIALS

- A. Remove and return all equipment and materials to Owner as specified or requested.
- B. All other existing construction and items to be removed shall be considered waste and shall become the property of Contractor. Remove from the site.

3. EXECUTION

## SECTION 02 41 00-2

### 3.01 ENVIRONMENTAL CONDITIONS

- A. Conduct selective demolition work in a manner that will minimize need for disruption of Owner normal operations. Provide Owner a minimum of 72 hours advance notice of demolition activities which will severely impact Owner normal operations.
- B. Condition of structures to be demolished:
  - 1. Owner assumes no responsibility for actual condition of items to be demolished.
  - 2. Conditions existing at time of inspection for bidding purposes will be maintained by Owner insofar as practicable.
- C. Protections:
  - 1. Ensure the safe passage of persons around the area of demolition. Conduct operations to prevent injury to adjacent buildings, structures, other facilities and persons.
- D. Explosives: The use of explosives will not be permitted.
- E. Promptly repair damages caused to adjacent facilities by demolition operations at no cost to Owner.
- F. Utility services:
  - 1. Contractor shall notify J.U.L.I.E. for the location of all existing underground utilities and replace if damaged by demolition or construction operations.
  - 2. Maintain existing utilities indicated to remain; keep in service and protect against damage during demolition operations.
  - 3. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by Architect/Engineer, Owner or authorities having jurisdiction. Provide temporary services during interruptions to existing utilities.
- G. Prior to commencement of demolition work, inspect areas in which demolition will be performed. Photograph existing conditions of structures, surfaces, equipment or surrounding properties which could be misconstrued as damage resulting from demolition operations. File with Owner prior to starting work.

### 3.02 REMOVAL OF EXISTING CONDITIONS

- A. Perform demolition in a systematic manner. Use such methods as required to complete demolition indicated on Drawings in accordance with demolition schedule and governing regulations:
- B. If unanticipated mechanical, electrical or structural elements which conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit report to Owner and Architect in written accurate detail. Pending receipt of directive from Architect/Engineer, rearrange demolition schedule as necessary to continue overall job progress without delay.

## SECTION 02 41 00-3

### C. Pollution controls:

1. Use water sprinkling, temporary enclosures and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level. Comply with governing regulations pertaining to environmental protection.
2. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding and pollution.
3. Clean adjacent structures and area of dust, dirt and debris caused by demolition operations.

### 3.03 DISPOSAL OF DEMOLITION MATERIALS

- A. Remove debris, rubbish and other materials resulting from demolition operations.
- B. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws and ordinances concerning removal, handling and protection against exposure or environmental pollution.
- C. Burning of removed materials from demolished structures will not be permitted on the site.
- D. Transport materials removed from demolished structures and properly dispose of from the site.

### 3.04 CLEAN UP

- A. Upon completion of demolition work, remove tools, equipment and demolished materials from site. Remove protections.
- B. Repair demolition performed in excess of that required. Return structures and surfaces that will remain to condition existing prior to commencement of demolition work. Repair adjacent construction or surfaces soiled or damaged by demolition work.

DIVISION 3 - CONCRETE WORK  
**Section 03 30 00 - Cast-in-Place Concrete**

**1. GENERAL**

**1.01 SECTION INCLUDES**

- A. Base Bid, General Contractor provide:
  - 1. Cast-in-place concrete footings, foundations, floor slabs, concrete materials, mix design, concrete placement and accessories.
  - 2. Concrete reinforcement.
  - 3. Concrete control joints, expansion joints and sealant.
  - 4. Concrete finishing and sealer.

**1.02 RELATED SECTIONS**

- A. Section 32 13 13 - Portland Cement Concrete Paving

**1.03 REFERENCES**

- A. ACI 301 - Specifications for Structural Concrete.
- B. ACI 117 - Specifications for Tolerances for Concrete Construction and Materials.
- C. ANSI/ASTM D1190 - Concrete Joint Sealer, Hot-Poured Elastic Type.
- D. ANSI/ASTM D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction.
- E. CRSI - Concrete Reinforcing Steel Institute Manual of Practice.

**1.04 TESTING**

- A. Test concrete from each pour for strength, slump, composition, etc, as indicated in Section 01 45 23. Submit testing reports to the Architect/Engineer.

**1.05 PROJECT RECORD DOCUMENTS**

- A. Accurately record actual locations of embedded utilities and components which are concealed from view.

**1.06 QUALITY ASSURANCE**

- A. Perform Work in accordance with ACI 301.
- B. Acquire cement and aggregate from same source for all work.

**2. PRODUCTS**

**2.01 CONCRETE MATERIALS**



## SECTION 03 30 00-2

- A. Cement: ASTM C150, Type I - Normal Portland type.
- B. Fine and Coarse Aggregates: ASTM C33, graded, 1 inch nominal maximum course aggregate size.
- C. Water: ASTM C94, potable and not detrimental to concrete.
- D. Air-Entraining Admixture: ASTM C260.
- E. Chemical Admixtures: Certified to be compliant with other admixtures and not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
  - 1. Water-Reducing Admixture: ASTM C494, Type A.
  - 2. Retarding Admixture: ASTM C494, Type B.
  - 3. Water-Reducing and Retarding Admixture: ASTM C494, Type D.
  - 4. High Range Water-Reducing Admixture: ASTM C494, Type F.
  - 5. High Range Water-Reducing and Retarding Admixture: ASTM C494, Type G.
  - 6. Plasticizing and Retarding Admixture: ASTM C1017, Type II.

### 2.02 VAPOR BARRIER

- A. Vapor Barrier: ASTM E 1745, Class A polyolefin film with a permeance of less than 0.01 perms per ASTM F 1249 or ASTM E96.

### 2.03 CONCRETE MIX

- A. Mix and deliver concrete in accordance with ASTM C94 and furnish batch ticket information.
  - 1. When air temperature is between 85° F and 90° F, reduce mixing and delivery time from 1 ½ hours to 75 minutes; when air temperature is above 90° F, reduce mixing and delivery time to 60 minutes.
- B. Provide concrete to the following mix design:

<u>Unit</u>	<u>Measurement</u>
Compressive Strength (28 day):	
Floor Slabs and Paving	4,000 psi
Footings, Foundations & Grade Beams	3,500 psi
Air Entrainment	5 percent (exterior only)
Slump - Plus or minus 1 inch	4 inches

## SECTION 03 30 00-3

- C. Use accelerating admixtures in cold weather only when approved by Architect/Engineer. Use of admixtures will not relax cold weather placement requirements.
- D. Use set retarding admixtures during hot weather only when approved by Architect/Engineer.
- E. Air Content: Do not allow air content of troweled finish floors to exceed 3 percent.

### 2.04 REINFORCEMENT

- A. Reinforcing Steel: ASTM A617, 60 ksi yield grade; plain axis steel bars, plain finish, sizes as indicated on the drawings.
- B. Reinforcing Steel Mat: ASTM A704, ASTM A615, 60 ksi yield grade; steel bars or rods, plain finish, sizes as indicated on the drawings.
- C. Stirrup Steel: ANSI/ASTM A82, plain finish.
- D. Welded Steel Wire Fabric: ASTM A185 Plain Type; in flat sheets; plain finish, sizes 6 x 6/W 2.9 x W 2.9 and 6 x 6/W 1.4 x W 1.4.
- E. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions including load bearing pad on bottom to prevent vapor barrier puncture.
- F. Fabricate concrete reinforcing in accordance with CRSI Manual of Practice.
- G. Locate reinforcing splices not indicated on Drawings, at point of minimum stress. Review location of splices with Architect/Engineer.

### 2.05 CONSTRUCTION (EXPANSION) JOINT MATERIALS

- A. Joint Filler: ANSI/ASTM D1752, closed cell polystyrene foam; resiliency recovery of 95 percent if not compressed more than 50 percent of original thickness.
- B. One-half inch thickness, unless indicated otherwise on the drawings.
- C. Recess joint filler for installation of sealant.
- D. Joint Sealant: Polyurethane; FS TT-S-00230, Type II, non-sag, Class A, gray color.
- E. Primer as recommended by sealant manufacturer.

### 2.06 SAW-CUT CONTROL JOINTS

- A. Saw cut joints within 24 hours after placing. Using 3/16 inch thick blade, cut into 1/3 depth of slab thickness.
- B. Install polyurethane sealant.

### 2.07 CURING/SEALING COMPOUND

## SECTION 03 30 00-4

- A. Sealer: ASTM C309, Type I, Class B, clear, waterborne, membrane forming curing and sealing compound; designed to seal freshly poured concrete to achieve maximum strength; to provide a dust proof concrete floor surface; and to not interfere with bonding of floor covering.

### 3. EXECUTION

#### 3.01 EXAMINATION

- A. Verify that conditions are ready for the work of this Section.
- B. Verify requirements for concrete cover over reinforcement.
- C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

#### 3.02 PREPARATION

- A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturers' instructions.
- B. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

#### 3.03 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304.
- B. Notify Architect/Engineer a minimum 24 hours prior to commencement of operations so that inspection of conditions and steel reinforcing, set and secured in place, may be inspected and approved.
- C. Ensure reinforcement, inserts, embedded parts, and formed joint fillers are not disturbed during concrete placement.
- D. Install vapor barrier under interior slabs on grade. Lap joints minimum 6 inches and seal watertight by taping edges and ends.
- E. Repair vapor barrier damaged during placement of concrete reinforcing. Repair with vapor barrier material; lap over damaged areas minimum 6 inches and seal watertight.
- F. Separate slabs on grade from vertical surfaces with ½ inch thick joint filler.
- G. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken. Deliver information to testing personnel.
- H. Place concrete continuously between predetermined expansion and construction joints.
- I. Do not interrupt successive placement; do not permit cold joints to occur.
- J. Screed slabs on grade level, maintaining surface flatness of maximum 1/4 inch in 10 ft.

## SECTION 03 30 00-5

- K. In areas with floor drains, maintain floor elevation at walls. Pitch surfaces uniformly to drains at 1/4 inch per foot.

### 3.04 REINFORCEMENT PLACEMENT

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position.
- B. Maintain concrete cover around reinforcing as follows:

<u>Item</u>	<u>Coverage</u>
Footings and Concrete Formed Against Earth	3 inch
Slabs on Fill	2 inch

### 3.05 SCHEDULE - WELDED STEEL WIRE FABRIC

- A. 5 inch or thicker concrete slabs and paving: 6 x 6/W 2.9 x W2.9.
- B. 4 inch concrete slabs and paving: 6 x 6/W 1.4 x W1.4.

### 3.06 CURING AND PROTECTION

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury. Comply with ACI 306.1 for cold weather protection and ACI 301 for hot weather protection during curing.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete. Moisture loss should not exceed 0.2 lbs./sq. ft./hour.
- C. Apply curing, sealing compound in accordance with the manufacturers printed instructions. Recoat area subjected to heavy rainfall within three hours after initial application.

### 3.07 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraighening until surface is left with a uniform, smooth, granular texture.
- C. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
  - 1. Apply a trowel finish to surfaces exposed to view or to be covered with finish flooring.

## SECTION 03 30 00 - 6

2. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10 foot-long straightedge resting on 2 high spots and placed anywhere on the surface does not exceed 1/8 inch.
- D. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.

### 3.08 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by the Architect/Engineer.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect/Engineer for each individual area.

DIVISION 04 - MASONRY  
**Section 04 05 13 - Mortar**

1. GENERAL

1.01 SECTION INCLUDES

- A. Base Bid, General Contractor provide:
  - 1. Mortar for concrete masonry units.
  - 2. Mortar for veneer masonry system.

1.02 RELATED WORK

- A. Section 04 22 00 - Concrete Masonry Units

1.03 REFERENCES

- A. ASTM C5 - Quicklime for Structural Purposes.
- B. ASTM C91 - Masonry Cement.
- C. ASTM C144 - Aggregate for Masonry Mortar.
- D. ASTM C150 - Portland Cement.
- E. ASTM C207 - Hydrated Lime for Masonry Purposes.
- F. ASTM C270 - Mortar for Unit Masonry.
- G. ASTM C387 - Packaged, Dry, Combined Materials, for Mortar and Concrete.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and protect products under provisions of Section 01 66 00.
- B. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Maintain materials and surrounding air temperatures to minimum 50° F prior to, during, and 48 hours after completion of masonry work.

2. PRODUCTS

2.01 MANUFACTURERS - PREMIX MORTAR

- A. Louisville Cement Co. - Product, Brixment.
- B. Kosmos Portland Cement Co. - Product, Masonry Mortar.

## SECTION 04 05 13-2

- C. General Portland Cement Co. - Masonry Mortar.
- D. Substitutions in accordance with Section 01 26 00.

### 2.02 MATERIALS

- A. Masonry Cement: ASTM C91, Type M.
- B. Mortar Aggregate: ASTM C144, standard masonry type.
- C. Hydrated Lime: ASTM C207, Type S.
- D. Quicklime: ASTM C5, non-hydraulic type.
- E. Premix Mortar: ASTM C387, using white cement, Normal strength.
- F. Water: Clean and potable.

### 2.03 MORTAR MIXES

- A. Mortar for Load Bearing Walls and Partitions: ASTM C270, Type M, using the Property Method.
- B. Mortar for Reinforced Masonry: ASTM C270, Type M, using the Property Method.
- C. Mortar for Veneer Masonry Walls: ASTM C270, Type S, using the Property Method.

## 3. EXECUTION

### 3.01 MORTAR MIXING

- A. Thoroughly mix mortar ingredients in quantities needed for immediate use in accordance with ASTM C270.
- B. Do not use anti-freeze compounds to lower the freezing point of mortar.
- C. If water is lost by evaporation, retemper only within two hours of mixing.
- D. Use mortar within two (2) hours after mixing at temperatures of 80° F, or two-and-one-half (2-1/2) hours at temperatures under 50° F.

DIVISION 04 - MASONRY  
**Section 04 22 00 - Concrete Masonry Units**

**1. GENERAL**

**1.01 SECTION INCLUDES**

- A. Base Bid, General Contractor provide:
  - 1. Concrete masonry units.
  - 2. Reinforcement, anchorage, and accessories.

**1.02 RELATED SECTIONS**

- A. Section 04 05 13 - Mortar.
- B. Section 07 92 00 - Joint Sealers.

**1.03 REFERENCES**

- A. ASTM C90 - Hollow Load Bearing Concrete Masonry Units.

**1.04 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver, store and protect products under provisions of Section 01 66 00.
- B. Accept prefaced units on site. Inspect for damage.

**1.05 ENVIRONMENTAL REQUIREMENTS**

- A. Maintain materials and surrounding air temperature to minimum 50° F prior to, during, and 48 hours after completion of masonry work.

**2. PRODUCTS**

**2.01 CONCRETE MASONRY UNITS**

- A. Masonry Units: Nominal modular size of 6 x 8 x 16 inches. Provide special units for 90° corners, bond beams, lintels, etc.
- B. Masonry Units: Nominal modular size of 10 x 8 x 16 inches. Provide special units for 90° corners, bond beams, lintels, etc.

**2.02 REINFORCEMENT AND ANCHORAGE**

- A. Single Wythe Joint Reinforcement: Truss type; hot dip galvanized after fabrication cold-drawn 9 ga. steel conforming to ANSI/ASTM A82.
- B. Reinforcing Steel: Bar type, specified in Section 03 30 00; sizes as indicated on the drawings, unprotected finish.

**2.03 ACCESSORIES**



## SECTION 04 22 00-2

- A. Joint Filler: Closed cell polyurethane; oversized 50 percent to joint width; self-expanding; ½ inch wide by maximum lengths.
- B. Sealant: As specified in Section 07 92 00.
- C. Cleaning Solutions: Non-acidic, not harmful to masonry work or adjacent materials.

### 3. EXAMINATION

#### 3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Verify items provided by other Sections of work are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.
- D. Beginning of installation means installer accepts existing conditions.

#### 3.02 PREPARATION

- A. Direct and coordinate placement of metal anchors.

#### 3.03 COURSING

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Lay concrete masonry units in running bond. Course one unit and one mortar joint to equal sixteen inches (16"). Form concave mortar joints.

#### 3.04 PLACING AND BONDING

- A. Lay hollow masonry units with face shell bedding on head and bed joints.
- B. Buttering corners of joints or excessive furrowing of mortar joints are not permitted.
- C. Remove excess mortar as work progresses.
- D. Interlock intersections and external corners.
- E. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustments must be made, remove mortar and replace.
- F. Perform job site cutting of masonry units with masonry saw to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

#### 3.05 REINFORCEMENT AND ANCHORAGES - SINGLE WYTHE MASONRY

- A. Install horizontal joint reinforcement 16 inches on center, every other course.

## SECTION 04 22 00-3

- B. Lap joint reinforcement ends minimum 6 inches.

### 3.06 TOLERANCES

- A. Maximum Variation From Alignment of Columns: 1/4 inch.
- B. Maximum Variation From Unit to Adjacent Unit: 1/32 inch.
- C. Maximum Variation From Plane of Wall: 1/4 inch in 10 feet and 1/2 inch in 20 feet or more.
- D. Maximum Variation From Level Coursing: 1/8 inch in three (3) feet, 1/4 inch in 10 feet, and 1/2 inch in 30 feet.
- E. Maximum Variation of Joint Thickness: 1/8 inch in three (3) feet.

### 3.07 CUTTING AND FITTING

- A. Cut and fit for chases, pipes, conduit, sleeves, and grounds. Coordinate with other Sections of work to provide correct size, shape, and location.

### 3.08 CLEANING

- A. Clean work under provisions of Section 01 74 00.
- B. Remove excess mortar and mortar smears.
- C. Replace defective mortar. Match adjacent work.
- D. Use non-metallic tools in cleaning operations.

DIVISION 05 - METALS

**Section 05 40 00 - Cold-Formed Metal Framing**

1. GENERAL

1.01 SECTION INCLUDES

A. Base Bid, General Contractor provide:

1. Labor, materials, equipment, special tools, supervision and services to complete the steel framing system indicated, noted and detailed on the drawings and specified herein.

1.02 RELATED SECTIONS

A. Section 06 10 00 - Rough Carpentry.

B. Section 07 24 13 - Cement Board.

1.03 SUBMITTALS

A. Submit shop drawings and product data under provisions of Section 01 33 23.

B. Provide product data on standard framing members. Describe materials and finish, product criteria, limitations and fasteners.

2. PRODUCTS

2.01 FRAMING MATERIALS

A. Studs: ASTM A446, A570 or A611 sheet steel, formed to channel shape, punched web, 25 gage and heavier, sizes as per drawings and noted herein. Refer to plans for stud location.

2.02 ACCESSORIES

A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered, manufacturer's standard shapes, same finish as framing members.

B. Plates, Gussets, Clips: Formed sheet steel, thickness determined for conditions encountered, manufacturer's standard shapes, same finish as framing members.

2.03 FASTENERS

A. Self-drilling, Self-tapping Screws, Bolts, Nuts and Washers: ASTM A90, hot dip galvanized.

B. Anchorage Devices: Power driven, Powder actuated, Drilled expansion bolts.

C. Welding: In conformance with AWS D1.1.

D. Galvanizing: G90 coating class.

E. Primer: FS TT-P-645, touch-up for galvanized surfaces.

SECTION 05 40 00-2

3. EXECUTION

3.01 INSPECTION

- A. Verify that building framing components are ready to receive work.
- B. Beginning of installation means acceptance of existing conditions.

3.02 ERECTION OF STUDDING

- A. Install components in accordance with manufacturer's instructions.
- B. Align top and bottom tracks to be straight and true. Provide shims as required. Secure in place with fasteners or welding at maximum 24 inches on center. Coordinate installation of sealant with erection of studding.
- C. Place studs at 16 inches on center; not more than 2 inches from abutting walls and at each side of openings. Connect studs to tracks using fastener method.
- D. Erect non-load bearing studs one piece full length. Splicing of studs is not permitted.
- E. Erect non-load bearing studs, brace, and reinforce to develop full strength to meet design requirements.
- F. Extend stud framing to existing construction surfaces as indicated on the plans. Securely anchor studs to existing surfaces using manufacturer's recommended fasteners.
- G. Install framing between studs to prevent stud rotation.
- H. Complete framing ready to receive cement board sheathing.

END

05 40 00-2

DIVISION 05 - METALS  
**Section 05 50 00 - Miscellaneous Metals**

1. GENERAL

1.01 SECTION INCLUDES

A. Base Bid, General Contractor provide:

1. All miscellaneous metal items indicated, noted, detailed and scheduled on the Drawings and/or specified herein, including anchors and lintels.
2. Structural steel items.

1.02 RELATED SECTIONS

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Section 04 22 00 - Concrete Masonry Units.

1.03 REFERENCES

- A. Steel materials shall conform to "Structural Steel", ASTM A36-75.

1.04 SUBMITTALS

- A. Shop drawings and product data in accord with 01 33 23.

2. PRODUCTS

2.01 MISCELLANEOUS METAL ITEMS

- A. Structural steel shall have 36,000 psi yield point rolled to the size and shapes indicated on the construction documents.
- B. Miscellaneous Metal items include but are not necessarily limited to the following:
  1. Steel angles, shelf angles, lintels and miscellaneous supports requiring fabrication.
  2. All bolts, inserts, clip angles and struts.

2.02 FABRICATION

- A. The fabricator shall verify all dimensions of work adjoining. Such other work shall be inspected before fabrication and/or installation of items specified. Measurements of adjoining work shall be obtained so that work shall fit closely to spaces provided.
- B. Provide miscellaneous supports shown requiring fabrication in accordance with notes and details.

2.03 PRIMER PAINT

SECTION 05 50 00-2

- A. Primer paint shall be Alkyd-Oil Resins with Aliphatic Hydrocarbon solvents.

3. EXECUTION

3.01 INSTALLATION

- A. Install miscellaneous metal items in accordance with manufacturer's instructions and as indicated in the construction documents.

END

05 50 00-2

DIVISION 06 - WOOD, PLASTICS & COMPOSITES  
**Section 06 10 00 - Rough Carpentry**

1. GENERAL

1.01 SECTION INCLUDES

- A. Base Bid, General Contractor provide:
  - 1. Complete wood wall and roof framing.
  - 2. Miscellaneous wood blocking, nailers and framing.
  - 3. Preservative treated wood where indicated on the drawings.

1.02 RELATED WORK

- A. Section 06 17 53 - Shop-Fabricated Wood Trusses.
- B. Section 06 20 00 - Finish Carpentry.

1.03 REFERENCES

- A. ALSC - American Lumber Standards Committee: Softwood Lumber Standards.
- B. ANSI A208.1 - Mat Formed Wood Particle Board.
- C. APA - American Plywood Association.
- D. AWWPA - American Wood Preservers' Association: Book of Standards.
- E. FS - TT-W-571 - Wood Preservation: Treating Practices.
- F. NFPA - National Forest Products Association.
- G. SFPA - Southern Forest Products Association.

1.04 QUALITY ASSURANCE

- A. Lumber Grading Agency: Certified by ALSC, Product Standard FS-20.
- B. Plywood Grading Agency: Certified by APA, Product Standard FS-1.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store and protect products under provisions of Section 01 66 00.

2. PRODUCTS

2.01 LUMBER MATERIALS

- A. Lumber Grading Rules: SFPA.
- B. Non-structural Light Framing: SPF species, No. 2 grade, 19 percent maximum moisture content.

06 10 00-1

## SECTION 06 10 00-2

- C. Studding: SPF species, No. 2 grade, 19 percent maximum moisture content.

### 2.02 ACCESSORIES

- A. Fasteners: Hot-dipped galvanized steel for exterior, high humidity, and treated wood locations; plain finish elsewhere; size and type to suit condition.
- B. Anchors: Bolts or ballistic fasteners for anchorage to steel.
- C. Sill Gasket: 1/4 inch thick, six (6) inches wide; closed cell polyethylene foam from continuous rolls.

### 2.03 WOOD TREATMENT

- A. Wood Preservative Pressure Treatment: AWWPA Treatment U1-UC2 using waterborne preservative with 0.25 percent retainage.

## 3. EXECUTION

### 3.01 FRAMING

- A. Erect wood framing members level and plumb.
- B. Place horizontal members laid flat, crown side up.
- C. Construct framing members full length without splices.
- D. Double members at openings over one sq. ft. Space short studs over and under opening to stud spacing.
- E. Construct double joist headers at ceiling openings.
- F. Place sill gasket directly on cementitious foundation. Puncture gasket clean and fit tight to protruding foundation anchor bolts.

### 3.02 TOLERANCES

- A. Framing Members: 1/4 inch maximum from true position.



DIVISION 06 - WOOD, PLASTICS AND COMPOSITES  
**Section 06 17 53 - Shop-Fabricated Wood Trusses**

**1. GENERAL**

**1.01 SECTION INCLUDES**

- A. Base Bid, General Contractor provide:
  - 1. Prefabricated wood trusses for roof framing.
  - 2. Bridging, bracing, and anchorage.

**1.02 RELATED SECTIONS**

- A. Section 06 10 00 - Rough Carpentry.

**1.03 REFERENCES**

- A. ALSC - American Lumber Standards Committee: Softwood Lumber Standards.
- B. ASTM A167 - Stainless and Heat Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- C. ANSI/ASTM A446 - Sheet Steel, Zinc Coated (Galvanized) by the Hot-Dip Process, Physical (Structural) Quality.
- D. NFPA - National Forest Products Association.
- E. SFPA - Southern Forest Products Association.
- F. TPI - Truss Plate Institute.
- G. UL - Underwriters' Laboratories, Inc.

**1.04 SYSTEM DESCRIPTION**

- A. Design Live Load: 25 lbs/sq ft.
- B. Top Chord, Dead Load: 10 lbs/sq ft.
- C. Bottom Chord Dead Load: 10 lbs/sq ft.
- D. Minimum Top and Bottom Chord Member: 2 x 6.

**1.05 QUALITY ASSURANCE**

- A. Manufacturer: Company specializing in manufacture of prefabricated wood trusses with three (3) years minimum experience.
- B. Design trusses under direct supervision of Professional Engineer experienced in structural framing design of trusses registered in State of Illinois.
- C. Lumber Grading Agency: Certified by ALSC.

## SECTION 06 17 53-2

- D. Truss Plates: In accordance with Truss Plate Institute.

### 1.06 REGULATORY REQUIREMENTS

- A. Conform to 2015 International Building Code for loads, seismic zoning, and other governing load criteria.

### 1.07 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 01 33 23.
- B. Indicate framing system, sizes and spacing of joists, loads and joist cambers, bearing and anchor details, bridging and bracing, framed openings, and submit design calculations.
- C. The wood trusses shall be designed by a licensed structural engineer with the design sealed in the State of Illinois.

### 1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and protect products under provisions of Section 01 66 00.
- B. Transport and store trusses in vertical position resting on bearing ends.
- C. Protect trusses from moisture, warpage, and distortion during transit and when stored.

## 2. PRODUCTS

### 2.01 MATERIALS

- A. Lumber Grading Rules: SFPA.
- B. Steel Connectors: ANSI/ASTM A446 steel, Grade A; galvanized; die stamped with integral teeth.
- C. Fasteners: Galvanized for exterior, high humidity, and treated wood locations; plain finish elsewhere; size and type to suit condition.
- D. Wood Blocking: Framing for Openings: In accordance with Section 06 10 00. Softwood lumber, SPF species, construction grade, maximum moisture content of 19 percent (19%).

### 2.02 FABRICATION

- A. Verify dimensions and site conditions prior to fabrication.
- B. Cut members accurately to length to achieve tight joint connections.
- C. Jig trusses during fabrication to assure accurate configuration. Press connectors into lumber, both sides of joint simultaneously.
- D. Build camber into truss.

## 3. EXECUTION

## SECTION 06 17 53-3

### 3.01 INSPECTION

- A. Verify that supports and openings are ready to receive trusses.
- B. Verify sufficient end bearing area.
- C. Beginning of installation means acceptance of existing condition.

### 3.02 PREPARATION

- A. Coordinate placement of bearing and support items.

### 3.03 INSTALLATION

- A. Install trusses in accordance with manufacturer's instructions, at a spacing of 24 inches o.c.
- B. Place trusses true to line and level.
- C. Provide temporary bracing to hold trusses in place until permanently secured.
- D. Place permanent bridging, bracing, diagonal bracing and anchors to maintain trusses straight and in correct position before inducing loads in accordance with the Truss Plate Institute.
- E. Do not field cut trusses.
- F. Place headers and supports to frame openings required.
- G. Frame openings between trusses with lumber in accordance with Section 06 10 00.
- H. Coordinate placement of sheathing with work of this Section.

### 3.04 TOLERANCES

- A. Framing Members: one-half inch (1/2") maximum from true position.

DIVISION 06 - WOOD, PLASTICS & COMPOSITES  
**Section 06 20 00 - Finish Carpentry**

**1. GENERAL**

**1.01 SECTION INCLUDES**

A. Base Bid, General Contractor provide:

1. Finish carpentry items including the installation of casework, counter tops, trim, casing and miscellaneous carpentry items.

**1.02 RELATED SECTIONS**

- A. Section 06 10 00 - Rough carpentry.
- B. Section 12 36 61 - Solid Surfacing Window Sills

**1.03 REFERENCES**

- A. AWI - Quality Standards.
- B. FS MM - L - 736 - Lumber; Hardwood.
- C. FS MMM-A-130 - Adhesive, Contact.
- D. PS 1 - Construction and Industrial Hardwood.

**1.04 SUBMITTALS**

- A. Submit shop drawings and product data under provisions of Section 01 33 23.
- B. Submit shop drawings indicating materials, component profiles, fastening methods, jointing details, finishes, and to a minimum scale of 1-1/2 inch to one foot.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver, store and protect products under provisions of Section 01 66 00.
- B. Store materials in ventilated, interior locations under constant minimum temperatures of 60°F and maximum relative humidity of 55 percent.

**2. PRODUCTS**

**2.01 LUMBER MATERIALS**

- A. Softwood Lumber: PS 20; Premium grade in accordance with AWI; maximum moisture content of six percent (6%); white pine species, with mixed grain, of quality capable of transparent finish.

## SECTION 06 20 00-2

- B. Hardwood Lumber: FS MM-L-736; Premium grade in accordance with AWI; maximum moisture content of six percent (6%); Red Oak species, with mixed grain, of quality capable of transparent finish.

### 2.02 SHEET MATERIALS

- A. Softwood Plywood: PS 1; Standard Sheathing Grade, Group 1, Appearance Quality; fir species, with face veneer of rotary cut grain.
- B. Hardwood Plywood: ANSI/HPLA HP; Premium grade in accordance with AWI; veneer core material; Red Oak species, with face veneer of plain sliced grain.

### 2.03 ACCESSORIES

- A. Nails: Size and type to suite application, plain finish.
- B. Bolts, Nuts, Washers, Blind Fasteners, Lags, and Screws: Size and type to suit application; plain finish.
- C. Lumber for Shimming: Softwood lumber of cedar species.
- D. Primer: Alkyd primer sealer type.
- E. Wood Filler: Solvent base, tinted to match surface finish color.

## 3. EXECUTION

### 3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work and field measurements are as shown on drawings.
- B. Verify mechanical, electrical, and building items affecting work of this Section are placed and ready to receive this work.
- C. Beginning of installation means acceptance of existing conditions.

### 3.02 PREPARATION

- A. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

### 3.03 INSTALLATION

- A. Install work in accordance with AWI Premium quality standard.
- B. Set and secure materials and components in place, plumb and level.
- C. Install trim with nails at 16 inch on center.
- D. Install hardware in accordance with manufacturer's instructions.

### 3.04 TOLERANCES

## SECTION 06 20 00-3

- A. Maximum Variation from True Position: 1/16 inch.
- B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

### 3.05 PREPARATION FOR SITE FINISHING

- A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.
- B. Site Finishing: Refer to Section 09 91 00.

### 3.06 ADJUSTING AND CLEANING

- A. Adjust doors, drawers, hardware, fixtures and other moving or operating parts to function smoothly and correctly.
- B. Clean casework, counters, shelves, hardware, fittings and fixtures.

END

06 20 00-3

DIVISION 07 - THERMAL & MOISTURE PROTECTION  
**Section 07 21 00 - Thermal Insulation**

1. GENERAL

1.01 SECTION INCLUDES

- A. Base Bid, General Contractor provide:
  - 1. Board insulation for perimeter foundation wall.
  - 2. Sound control batts in interior wall construction.
  - 3. Glass fiber batts for exterior wall construction.
  - 4. Glass fiber batts for attic/ceiling cavity construction.

1.02 REFERENCES

- A. ASTM C665 - Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
- B. FS HH-I-521 - Insulation Blankets, Thermal.
- C. FS HH-I-1972/GEN - Insulation Board, Thermal, Faced, Polyurethane or Polyisocyanurate.

1.03 PERFORMANCE REQUIREMENTS

- A. Materials of this Section shall provide continuity of thermal barrier at building enclosure elements.

1.04 SUBMITTALS

- A. Product Data: Provide data on product characteristics, performance criteria, and limitations.
- B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

2. PRODUCTS

2.01 MATERIALS

- A. Board Insulation: ASTM C1289, Type I, Class I.

Thermal Resistance	R of 12.5, Minimum
Board thickness	2 inch

- B. Batt Insulation: Preformed glass fiber sound batt; friction fit, conforming to the following:

Thermal Resistance	R of 11, Minimum
Batt Size	3 ½ x 14 ½ inch
Facing	Unfaced

- C. Batt Insulation: Preformed glass fiber batt; friction fit, conforming to the following:

## SECTION 07 21 00-2

Thermal Resistance	R of 19, Minimum
Batt Size	5 ½ x 14 ½ inch
Facing	Unfaced

- D. Batt Insulation: Preformed glass fiber batt; friction fit, conforming to the following:

Thermal Resistance	R of 38, Minimum
Batt Size	12 x 22 ½ inch
Facing	Unfaced

### 3. EXECUTION

#### 3.01 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation are dry and ready to receive insulation.

#### 3.02 INSTALLATION

- A. Install insulation in accordance with insulation manufacturer's instruction.
- B. Install at vertical faces of foundation walls and 24" at the perimeter of the floor slab.
- C. Trim insulation neatly to fit spaces.
- D. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within the plane of insulation. Leave no gaps or voids.

#### 3.03 SCHEDULE

- A. Foundation Perimeter Insulation: R12.5, rigid board polyisocyanurate.
- B. Interior Stud Wall Insulation: R11 fiberglass batt, unfaced.
- C. Exterior Stud Wall Insulation: R19 fiberglass batt, unfaced.
- D. Attic Space: R38 fiberglass batt, unfaced.



DIVISION 07 - THERMAL AND MOISTURE PROTECTION  
**Section 07 24 00 - Exterior Insulation Finish System**

**1. GENERAL**

**1.01 SECTION INCLUDES**

- A. Complete exterior insulation and finish system; field applied; including air and moisture barrier, adhesives, board insulation, fasteners, reinforcing mesh, base coat, primer, and finish coat.
- B. Related metal flashing, sealants, and accessories.

**1.02 RELATED SECTIONS**

- A. Section 06 10 00 - Rough Carpentry.
- B. Section 07 92 00 - Joint Sealers.
- C. Section 08 41 13 - Aluminum Entrances.

**1.03 REFERENCES**

- A. The system shall have been tested for the following criteria:
  - 1. Salt Spray Resistance - ASTM B117.
  - 2. Portland Cement - ASTM C150.
  - 3. Flatwise Tensile Strength - ASTM C297.
  - 4. Preformed, Cellular Polystyrene Thermal Insulation - ASTM C578.
  - 5. Glass Mat Gypsum for Use as Sheathing - ASTM C1177.
  - 6. Tensile Adhesion Properties of Sealants in EIFS Systems - ASTM C1382.
  - 7. Mandrel Bend Test - ASTM D522.
  - 8. Tensile Properties of Plastic Sheeting - ASTM D882.
  - 9. Abrasion Resistance - ASTM D968.
  - 10. PVC and VPVC Compounds - ASTM D1784.
  - 11. Water Resistance - ASTM D2247.
  - 12. Mold Growth - ASTM D3273.
  - 13. Water Vapor Transmission - ASTM E96.
  - 14. Mesh Tensile Break Strength - ASTM E2098.
  - 15. Tensile Adhesion - ASTM E2134.
  - 16. Drainage Efficiency - ASTM E2273.
  - 17. Air Leakage - ASTM E2357.
  - 18. Expanded Polystyrene (EPS) - ASTM E2430.
  - 19. Freeze/Thaw Resistance - ASTM E 2485.
  - 20. Impact Resistance - ASTM E2486.
  - 21. WRB Coatings - ASTM E2570.
  - 22. Assembly Evaluation - ANSI FM 4880.
- B. Fire performance in accordance with ASTM E84, ASTM E119 and NFPA 268.

**1.04 SYSTEM DESCRIPTION**

## SECTION 07 24 00-2

- A. The system is an Exterior Insulation and Finish System, class PB, consisting of an adhesive, expanded polystyrene insulation board, base coat, reinforcing mesh(es), primer, and finish coat. System shall be field applied.

- 1. System to be two (2) color system. Colors and texture by Owner from standard selections.

- B. The Contractor shall also be responsible for related air and moisture barrier, flashings, and sealants in conjunction with the installation of the Exterior Insulation and Finish System.

### 1.05 SUBMITTALS

- A. Submit product data on all system components and system installation.
- B. Submit shop drawings depicting any and all control joint locations, expansion joint locations, tooled joint locations and details for the system components and installation.
- C. Provide two (2) 8"x8" samples for EIFS color and texture to the Architect for Owner selection.
- D. Provide two (2) color samples for sealant at control/expansion joints to the Architect for selection.
- E. Submit copy of manufacturer's standard five (5) year warranty.

### 1.06 QUALITY ASSURANCE

- A. Applicator shall be knowledgeable in the proper installation of the system and shall be experienced and competent in the installation of Exterior Insulation and Finish Systems.
- B. Applicator shall be knowledgeable in the installation of related flashing and sealant materials related to and integral to producing a complete Exterior Insulation and Finish System.
- C. Insulation board manufacturer shall be capable of producing the Expanded Polystyrene (EPS) in accordance with the Exterior Insulation and Finish System manufacturer's requirements.

### 1.07 DELIVERY, STORAGE AND HANDLING

- A. All system components and materials shall be delivered to the job site in the original, unopened packages with labels intact. Upon arrival, materials shall be inspected by the applicator for any physical damage, freezing or overheating. Questionable materials shall not be used and should be reported to the manufacturer if discovered.
- B. Store materials in a cool, dry location, out of direct sunlight, protected from weather and damage. Store materials in a temperature range within manufacturer's listed requirements.

### 1.08 ENVIRONMENTAL CONDITIONS

- A. The application of wet materials shall not take place during inclement weather unless appropriate protection is provided. Protect materials from inclement weather until they are completely dry.

## SECTION 07 24 00-3

- B. At the time of application, the minimum air and wall surface temperature shall be in strict accordance to manufacturer's requirements. Maintain these temperatures with adequate air ventilation and circulation for a minimum of 24 hours thereafter, or until products are completely dry.

### 1.09 SEQUENCING AND SCHEDULING

- A. Installation of the systems shall be coordinated with the other trades and sufficient manpower and equipment shall be employed to ensure a continuous operation, free of cold joints, scaffold lines, texture variations, et cetera. Coordinate with installation of window units for weather tight system.

### 1.10 WARRANTY

- A. Provide a written manufacturer's five (5) year labor and materials warranty from the date of substantial completion.

## 2. PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS - PRODUCTS

- A. Sto Corp. - StoTherm Classic.
- B. Drivit Systems - Outsulation
- C. Substitutions: Under provisions of Section 01 26 00.

### 2.02 AIR/MOISTURE BARRIER

- A. Joint Treatment, Rough Opening Protection, and Detail Components:
  - 1. Ready mixed coating applied by trowel or knife for rough opening protection of frame walls and joint treatment when used with system mesh.
  - 2. Ready mixed coating applied by brush, roller, or spray for rough opening protection of frame walls and joint treatment of sheathing when used with system fabric.
  - 3. One component rapid drying gun-applied joint treatment for sheathing.
- B. Ready mixed waterproof coating for glass mat gypsum sheathing.
- C. Flexible air barrier membrane for continuity at transitions such as sheathing to foundation, dissimilar materials, flashing lap transitions, and through wall joints.

### 2.03 ADHESIVE

- A. Cementitious Adhesive: Factory blended one-component polymer-modified Portland cement based high build adhesive.

### 2.04 INSULATION BOARD

## SECTION 07 24 00-4

- A. Expanded Polystyrene (EPS) insulation board, nominal 1.0 pcf, and in compliance with ASTM E2430 and ASTM C578 Type I requirements, listed as compatible with EIFS application. Thickness and configuration per Drawings.

### 2.05 BASE COAT

- A. Cementitious Base Coat: Factory blended one-component polymer-modified Portland cement based high build base coat.

### 2.06 REINFORCING MESHES

- A. Standard Mesh: Nominal 4.5 oz/sy, symmetrical, interlaced open-weave glass fiber fabric made with alkaline resistant coating (achieves Standard Impact Classification).
- B. Detail Mesh: Nominal 4.2 oz/yd, flexible, symmetrical, interlaced glass fiber fabric, with alkaline resistant coating (used for back wrapping, detailing, sheathing joint reinforcement, etc.).

### 2.07 PRIMER

- A. Primer: Acrylic based tintable primer for spray application.

### 2.08 FINISH COAT

- A. Finish Coat: Acrylic based texture wall finish with graded marble aggregate. Finish colors and texture by Owner.

### 2.09 JOB MIXED INGREDIENTS

- A. Water: Clean and potable.
- B. Portland Cement: In conformance with ASTM C150.
- C. Mix components in accordance with manufacturer's strict instructions. Mix only as much material as can be readily used. Do not use anti-freeze compounds or other additives.

### 2.10 ACCESSORIES

- A. Starter Track: Rigid PVC plastic draining starter drip track.

### 2.11 SYSTEM COMPONENTS

- A. All components shall be obtained from the system manufacturer or one of its authorized distributors.

## 3. EXECUTION

### 3.01 EXAMINATION

- A. Verify that substrate and conditions are ready to receive the work of this section. Beginning of installation means acceptance of existing conditions.

## SECTION 07 24 00-5

- B. Prior to installation of the system, ensure that all needed flashings and other weatherproofing and waterproofing details have been completed, if such completion is required prior to the system application.

### 3.02 PREPARATION

- A. The system materials shall be protected from inclement weather and other sources of damage prior to, during, and following application until completely dry.
- B. Protect adjoining work and property during system installation.
- C. The substrate shall be prepared as to be free of foreign materials that inhibit adhesion.
- D. Fill large gaps between sheathing or voids around pipe, conduit, and similar penetrations with fire-resistant caulking material and finish flush with surface.

### 3.03 INSTALLATION

#### A. Air/Moisture Barrier:

1. Apply air/moisture barrier in strict accordance with manufacturer's explicit directions, treating all transitions, rough openings, sheathing joints, detailing, coating, et cetera, for integrated weather resistant system with flashings and other components.
2. Ensure system remains free of contamination. Install insulation system within 30 days, or as required by manufacturer. If system is not covered within allotted time period, clean and recoat.

#### B. EIFS:

1. Install EIFS in strict accordance with manufacturer's explicit directions, coordinating with installation work of other trades.
2. Provide control joints and reveals as detailed on Drawings.
3. Provide drips at window heads and where recommended.

#### C. Sealants:

1. All sealants shall be installed as soon as possible after completion of the system installation to produce a complete, weather resistant system, using manufacturer's standard details.
2. The sealant shall not be applied directly to textured finishes or base coat surfaces.

### 3.04 CLEANING AND PROTECTION

- A. All excess system material shall be removed from the job site by the contractor and properly disposed of.
- B. Clean finished installation in accordance with the manufacturer's recommendations.

SECTION 07 24 00-6

- C. The system shall be protected from inclement weather and other sources of damage until dry and permanent protection in the form of flashings, sealants, et cetera, are installed.
- D. Protect installed materials from dust, dirt, precipitation, freezing, and continuous high humidity until they are fully dry.

END

07 24 00-6

DIVISION 07 - THERMAL & MOISTURE PROTECTION  
**Section 07 24 13 - Cement Board**

**1. GENERAL**

**1.01 SECTION INCLUDES**

A. Base Bid, General Contractor provide:

1. Cement board.
2. Fasteners and accessories.

**1.02 RELATED SECTION**

- A. Section 05 40 00 - Cold-Formed Metal Framing.
- B. Section 06 10 00 - Rough Carpentry.
- C. Section 07 24 00 - Exterior Insulation Finishing System.

**1.03 REFERENCES**

- A. ASTM C1325 - Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cement Interior Substrate Sheets.
- B. ANSI/ASTM C754 - Installation of Framing Members to Receive Screw Attached Gypsum Wallboard, Backing Board, or Water Resistant Backing Board.
- C. ANSI/ASTM E119 - Fire Tests of Building Construction and Materials.

**1.04 QUALITY ASSURANCE**

- A. Applicator: Company specializing in cement board work with three years experience.

**1.05 SUBMITTALS**

- A. Submit product data describing cement board materials, product characteristics, performance criteria, limitations and durability.

**2. PRODUCTS**

**2.01 ACCEPTABLE MANUFACTURERS - GYPSUM BOARD SYSTEM**

- A. Ameriform.
- B. Hardibacker, James Hardie.
- C. Substitutions: Under provisions of Section 01 26 00.

**2.02 CEMENT BOARD MATERIALS**

- A. Impact Resistant Cement Board: 1/2 inch thick, maximum permissible length; ends and edges square cut.

## SECTION 07 24 13-2

### 2.03 ACCESSORIES

- A. Flexible membrane flashing tape, 30 mil thick, self-sealing, self-healing rubberized asphalt.
- B. Manufacturer's approved sealant and primer.

## 3. EXECUTION

### 3.01 INSPECTION

- A. Verify that site conditions are ready to receive work and opening dimensions are as indicated on shop drawings.
- B. Beginning of installation means acceptance of existing surfaces.

### 3.02 CEMENT BOARD INSTALLATION

- A. Install cement board in accordance with manufacturer's instructions.
- B. Erect single layer cement board in most economical direction, with ends and edges occurring over firm bearing.
- C. Use screws when fastening cement board to steel stud framing.

### 3.03 JOINT TREATMENT

- A. Tape joints with flashing tape if required to create a surface ready to receive finishes.

### 3.04 TOLERANCES

- A. Maximum Variation from True Flatness: 1/8 inch in 10 feet in any direction.



DIVISION 07 - THERMAL AND MOISTURE PROTECTION  
**Section 07 27 00 - Air Barrier**

1. GENERAL

1.01 SECTION INCLUDES

A. Base Bid, General Contractor provide:

1. Air infiltration fabric at exterior walls beneath siding and brick veneer

1.02 RELATED SECTIONS

A. Section 06 10 00 - Rough Carpentry.

B. Section 04 22 00 - Concrete Masonry Units.

1.03 SUBMITTALS

- A. Product data including manufacturer's specifications, surface preparation and application instructions. Include data substantiating that materials are recommended by manufacturer for applications indicated and comply with requirements.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who employs only persons trained and approved by air infiltration barrier manufacturer for installation of manufacturer's products.

- B. Performance Requirements: Indicate test results for air infiltration barrier and the barrier's physical properties.

1. Thickness: .008" min.
2. Tensile Strength: 35 lbs. per inch, ASTM D 882.
3. Water Vapor Transmission Rate: 48/59 perms, ASTM E 96.
4. Flame Spread/Smoke Developed: 0/15, ASTM E 84.
5. Air Leakage Rate: 0.03, ASTM E 283.

1.05 PROJECT CONDITIONS

- A. Weather and Substrate Conditions: Do not proceed with application of air infiltration barrier under any of the following conditions:

1. Ambient temperature is less than 40° F (4° C).
2. Rain or moist substrate.

2. PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

## SECTION 07 27 00-2

- A. Products: Cross laminated polyethylene, open mesh, non-woven fabric by one of the following manufacturers:

1. ANCI - CLAF fabric based breathable housewrap
2. Tyvek - CommercialWrap
3. Green Guard - Ultra Wrap
4. Substitutions in accordance to Section 01 26 00.

### 2.02 ACCESSORIES

- A. Sealing tape, staples and cap nails as recommended by the air infiltration barrier manufacturer.

## 3. EXECUTION

### 3.01 PREPARATION

- A. Clean substrates of substances that might interfere with the performance of the air infiltration barrier.

### 3.02 INSTALLATION

- A. Wrap exterior walls with product overlapping juncture of wall to floor.
- B. Overlap horizontal and vertical splices by 6", min. Secure air infiltration barrier at 12" centers on vertical stud line.
- C. Windows:
  1. If windows are not installed, cut product at opening, fold inside and attach to window framing.
  2. If windows are installed, trim product at middle of window flange and seal product at window frame.
- D. Tape around all wall penetrations including plumbing and electrical extrusions.
- E. Tape all vertical and horizontal splices.

DIVISION 07 - THERMAL AND MOISTURE PROTECTION  
**Section 07 42 13 - Metal Wall Panels**

**1. GENERAL**

**1.01 SECTION INCLUDES**

**A. Base Bid, General Contractor provide:**

1. Concealed fastener profiled wall panels to be used as exterior wall cladding, complete with all associated flashings, foam closures, trim, anchors, sealants, etc. as required to completed the installation of the panel system.

**1.02 PERFORMANCE REQUIREMENTS**

- A. Structural performance:** provide exterior wall cladding assemblies capable of withstanding the effects of applied loads, stresses and normal thermal movement without evidence of permanent defects of assemblies or components.
1. Wind Load: Velocity pressure of 20.7 lbs/sf acting inward or outward based upon basic wind speed (3-sec gust) of 90 mph, exposure B.
  2. Thermal Movements: Provide assemblies that allow for thermal movements resulting from the following maximum changes (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components and other detrimental effects: Temperature Change (range): 120 deg F, ambient; 180 deg F, material surfaces.
- B. Sealed joints** shall allow free and silent movement of panels during expansion and contraction while preventing uncontrolled penetration of moisture.
- C. Manufacturing and installation** shall prevent deformation of exposed surfaces.
- D. Not Permitted:** Vibration harmonics; wind whistles; noises caused by thermal movement; thermal movement transmitted to other building elements; loosening, weakening or fracturing of attachments or components of system.
- E. Structural Performance/Uniform Load Deflection Test:** Provide panel system which has been tested in accordance with ASTM E330 and shall perform at building design pressure. Maximum allowable deflection of span: L/180.
- F. Panels** shall be tested in accordance with ASTM E1592 structural testing and shall perform at building design pressure without deformation or failures of structural members.
- G. Air Infiltration:** Panel system shall not have air infiltration rate more than 0.06 cfm per sq. ft. of fixed wall area when tested in accordance with ASTM E283 at static air pressure differential of 6.24 psf.
- H. Static Water Penetration:** Panel system shall have no water penetration as defined by in test method when tested in accordance with ASTM E331. The ASTM E331 test shall be conducted at inward static pressure differential of not less than 15.0 psf.
- I. Dynamic Water Penetration:** Panel system shall have been tested in accordance with AAMA 501 and shall have passed with no uncontrolled water leakage at 15.00 psf dynamic pressure differential, with water application rate of 5 gal/hr/sf.

### 1.03 SUBMITTALS

- A. Product Data: Manufacturer's product literature for the concealed fastener profiled wall panel system as specified.
- B. Shop Drawings: Provide as required for exterior/interior concealed fastener profiled panels and accessories. Include plans, elevations, sections and details.
- C. Quality Assurance Submittals: Manufacturer's color charts showing the full range of colors available for units with factory-applied color finishes. Provide two (2) full size panels of specified profile, 12" long.

### 1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum of 5 years experience in manufacturing roll formed wall panel systems similar to those specified.
- B. Installer Qualifications: Acceptable to manufacturer.

### 1.05 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
  - 1. Store materials in accordance with manufacturer's recommendations.
  - 2. Handle materials carefully to avoid damage to materials and finishes.

### 1.06 PROJECT CONDITIONS

- A. Field Measurements: Verify actual supporting and adjoining construction by field measurements before fabrication, and indicate recorded measurements on final shop drawings. General Contractor and Installer to coordinate construction to ensure that panels fit properly to supporting stud members and adjoining construction and coordinate schedule with construction progress to avoid delaying the work.

### 1.07 WARRANTY

- A. Provide manufacturer's standard two (2) year warranty for installation and materials.
- B. Manufacturer's standard twenty (20) year finish warranty.

## 2. PRODUCTS

### 2.01 CONCEALED FASTENER PROFILED WALL PANELS

- A. General: Provide factory-formed metal wall panels designed to be field assembled and mechanically attaching panels to supports using concealed fasteners in interlocking side laps. Include accessories required for weathertight installation.

### 2.02 MANUFACTURER

- A. Firestone Building Products; Delta Series CFP-12 concealed fastener wall panels.
- B. Berridge; HS-12 concealed fastener wall panels.

- C. MBCI; Designer Series 12.0 flat panel- concealed fastener wall panels.
- D. Substitutions: Under provisions of Section 01 26 00.

## 2.03 MATERIALS

- A. Steel Panels: ASTM A653, G90 (lock-forming quality), extra smooth, tension-leveled, galvanized steel, minimum spangle.
  - 1. Finish: Coil-coated factory finish "Kynar 500" or "Hylar 5000".
  - 2. Color: Selected from manufacturer's standard color selection.
  - 3. Size: Panels shall be 7/8 inches in depth and coverage shall be 16 inches.
  - 4. Thickness: 24 gauge.
  - 5. Texture: Panels shall be smooth.
  - 6. The panels shall have an interlocking side lap feature which conceals the fasteners requiring no panel clips.
  - 7. The panels shall have factory applied sealant concealed within the interlocking joint.
  - 8. Exposed panel fasteners are unacceptable.
- B. Metal Panel Trim: Exposed metal panel trim work in the same material and finish as furnished for the wall panel.

## 2.04 FABRICATION

- A. Tolerances:
  - 1. Form panels in longest practical lengths, true to shape, accurate in size, square, and free from distribution or manufacturing defects.
  - 2. Bend lines, breaks, and angles shall be sharp and true, and surfaces shall be free from warp or buckle.
- B. Material surfaces shall be free of scratches or marks caused during fabrication.
- C. Panel shearing length to be: +/- 1/16".
- D. Ensure that entire project is manufactured from single color coil paint run to ensure color uniformity.
- E. Provide factory applied strippable plastic film for protection during fabrication and installation.

## 2.05 ACCESSORIES

- A. All fasteners shall be non-corrosive type, as recommended by the panel manufacturer. Provide self-tapping screws and other suitable fasteners designed to withstand building design loads.
  - 1. Fasteners shall be minimum #14 diameter, self-tapping, with hex head.
  - 2. Fasteners to be either cadmium plated carbon steel or series 300 stainless steel with bonded neoprene washers.
  - 3. Fastener type, size and spacing to be engineered according to specific project conditions and design loads.
- B. Flashing: Unless noted otherwise, shall be same material and gauge as for panel where exposed.

C. Panel Sealants:

1. Hidden Sealant Tape: Pressure-sensitive, gray isobutylene compound sealant tape with release-paper backing. Provide permanently elastic, non-sag, non-toxic, non-staining tape 1/8" thick and 1" wide.
2. Hidden Joint Sealant: ASTM C90; elastomeric polyurethane, polysulfide, or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal wall panels and remain weathertight; and as recommended in writing by metal wall panel manufacture.
3. Non-Skinning Butyl Sealant: ASTM C734 Non-hardening, non-drying, non-oxidizing butyl rubber-based sealant.
4. Accessory Attachment Tape: Pressure-sensitive 1/8" thick and 1" wide VHB tape.

D. Subgirts: Provide G90 galvanized steel of gauge and spacing required for panel structural requirements, as recommended by the panel manufacturer and in accordance with approved shop drawings. To avoid galvanic reaction, separate dissimilar metals.

E. Foam Closure Strips: Closed-cell, expanded, cellular, rubber or cross-linked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1" thick, flexible closure strips; cut or pre-molded to match metal wall panel profile. Provide closure strips where indicated by manufacturer's recommendations or necessary to ensure weathertight construction.

F. Metal Closure Strips: Unless noted otherwise, shall be same material and gauge as for panel.

G. Metal Panel Trim: Exposed metal panel flashing trim work in the same material and finish as furnished for the wall panel.

## 2.06 FINISHES

A. General: Comply with NAAMM's Metal Finishes Manual for architectural metal products for recommendations for applying and designating finishes.

1. Coating shall be two-coat Coil-Coated Fluorocarbon Resin utilizing 70% Kynar 500 resins. Color as selected by Owner from manufacturer's standard colors.
2. Provide factory applied strippable plastic film for protection during fabrication and installation
3. Durability: Provide coating field tested under normal range of weather conditions for a minimum of 20 years without significant peel, blister, flake, chip, crack, or check in finish; without chalking in excess of a chalk rating of 8 according to ASTM D 4214, and without fading in excess of 5 Hunter units.

## 3. EXECUTION

### 3.01 PREPARATION

A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation. Panel substructure shall be level and plumb. Coordinate delivery of such items to project site.

### 3.02 INSTALLATION

A. General: Install metal wall panels according to manufacture's written instructions in orientation, sizes and locations indicated on drawings.

B. Erect panel level and plumb, in proper alignment in relation to substructure framing and

established lines; follow SMACNA Architectural Sheet Metal manual and standard practices.

- C. Panels shall be erected in accordance with approved shop drawings.
- D. Panel anchorage shall be structurally sound and spaced to resist design loads.
- E. Completed system shall be free from over bending, deforming, stretching, distortion, waves, and buckles.
- F. Install joint fillers and sealants where indicated and where required for weathertight performance of metal wall panel assemblies. Provide types of fillers and sealants indicated or if not indicated, types as recommended by metal wall panels manufacturer.
  - 1. Seal side joints where recommended by metal wall panel manufacturer.
  - 2. Prepare joints and apply sealants to comply with the requirements in Section 07 92 00 - Joint Sealants.
- G. Repair installed air and weather barrier in accordance with Section 07 27 13 if damaged during installation of metal wall panel system.

### 3.03 CLEANING AND PROTECTING

- A. Clean exposed surfaces of panels that are not protected by temporary covering to remove fingerprints and soil during construction period.
- B. Clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.
- C. Protect panels from damage during construction. Use temporary protective coverings where needed as approved by the panel manufacturer.
- D. Clean and touch up minor abrasions in finish with air-dried coating that matches color and gloss, and is compatible with, factory-applied finish coating.
- E. Remove panels damaged beyond repair and replace with new panels to match adjacent undamaged panels.
- F. Remove protective film immediately after installation.

END SECTION

DIVISION 7 - THERMAL & MOISTURE PROTECTION  
**Section 07 50 23 – PVC MEMBRANE ROOFING**

**1. GENERAL**

**1.01 SECTION INCLUDES**

**A. Base Bid, General Contractor Provide:**

1. Single-ply PVC fully adhered membrane roofing and flashing system as shown and herein specified.
  - a. Install new:
    - (1) Tapered insulation.
    - (2) Coverboard.
    - (3) PVC Roof membrane
    - (4) Base flashing.
    - (5) Counterflashing.
    - (6) Scuppers.

**1.02 RELATED SECTIONS**

- A. Section 06 10 00 - Rough Carpentry.
- B. Section 07 92 00 - Joint Sealants

**1.03 QUALITY ASSURANCE**

**A. Qualifications:**

1. The installing contractor shall be approved or franchised by the roofing system manufacturer.
2. The job foreman shall be trained by the manufacturer in the installation of the specified system.
3. The installing contractor shall comply with the Illinois Roofing Industry Licensing Act.

**B. Manufacturer's Qualifications:**

1. Have examined project drawings, specifications and warranty requirements and confirmed their specified products are acceptable for and compatible with the roofing and flashing system design.
2. Manufacturer to issue the specified warranty if the roofing and flashing systems are installed in accord with their requirements.

**1.04 REFERENCES**

**A. Standards:**

1. American Society for Testing and Materials (ASTM).



## SECTION 07 50 23-2

- a. Factory Mutual Laboratories (FM).
- b. Underwriters Laboratories (UL)
- c. Sheet Metal and Air Conditioning Contractors National Assoc. (SMACNA)
- d. EPA – Energy Star Roof Products
- e. Cool Roof Ratings Council

### 1.05 SUBMITTALS

- A. Make all submittals in accord with Section 01 33 23.
- B. Endorsement of Roofing Firm: Contractor: Within 15 days of receiving the Notice of Award, submit the manufacturer's endorsement of the installing firm.
- C. Shop Drawings:
  - 1. Submit shop drawings to the manufacturer for review and comment.
  - 2. Submit only manufacturer reviewed shop drawings to the A/E.
  - 3. Minimum Scale for Roof Plan: 1/8" = 1' 0".
  - 4. Minimum Scale for Details: 1-1/2" = 1' 0".
  - 5. Submit the following:
    - a. Tapered roof insulation plan.
    - b. Insulation fastener pattern.
    - c. Base flashings.
    - d. Membrane terminations.
    - e. Counterflashing.
    - f. Scupper.

### 1.06 DELIVERY, STORAGE AND HANDLING

- A. Per roofing manufacturer's recommendations.
- B. Deliver materials requiring fire resistant classifications packaged with labels intact and legible.

### 1.07 PROJECT CONDITIONS

- A. New Construction:
- B. Protection:
  - 1. Protect roof membrane, building surfaces, paving, and landscaping from traffic and roofing equipment.
  - 2. Restore or replace all work or materials damaged by the roofing operation.
  - 3. Remove protection materials upon completion of the work.

### 1.08 WARRANTY

07 50 23-2

## SECTION 07 50 23-3

- A. Provide the manufacturer's standard twenty (20) year weathertight warranty.

### 2. PRODUCTS

#### 2.01 MATERIALS

- A. For the entire roofing system provide adhesives, sealants, pre-molded and field fabricated flashings, fasteners, and other related components manufactured or recommended by the selected manufacturer.

#### 2.02 ACCEPTABLE PVC ROOFING SYSTEM MANUFACTURERS

<u>MANUFACTURER</u>	<u>BRAND</u>
A. Carlisle SynTec System	PVC Sure-Flex
B. Duro-Last Roofing	Duro-Tuff PVC
C. GAF Building Materials Corp.	EverGuard PVC
E. Johns-Manville	JM PVC
F. Mule-Hide Products Co.	Mule-Hide
G. Versico Inc.	VersiFleece PVC

#### 2.03 ROOF INSULATION

##### A. INSULATION TYPE

1. BASE INSULATION	<u>ASTM</u>	<u>R/INCH</u>
a. Polyisocyanurate	C1289	6.00(LTTR)
2. COVERBOARD, ½"		
a. Dens Deck Prime – Georgia Pacific		
b. Securock – United States Gypsum		
c. Invinsa – Johns Manville		
d. SecurShield HD – Carlisle		
e. H-Shield – Hunter Panels		

##### B. Roof Insulation for Tapered Areas:

1. Polyisocyanurate, Minimum Thickness: 5 inches, Slope: 1/8 in./ft.
2. Crickets & Saddles: Polyisocyanurate, Slope: 1/4in./ft.

#### 2.04 INSULATION ATTACHMENT

07 50 23-3

## SECTION 07 50 23-4

- A. Fasteners manufactured or approved by the roofing system manufacturer, and that have Factory Mutual approval.
- B. Adhesive manufactured or approved by the roofing system manufacturer, and that have Factory Mutual approval.

### 3. EXECUTION

#### 3.01 ENVIRONMENTAL CONDITIONS

- A. Install roofing only in dry weather.
- B. Comply with manufacturer's climatic restrictions.

#### 3.02 INSPECTION

- A. Examine all surfaces for inadequate anchorage, foreign material, moisture, unevenness, or other conditions which could prevent the best quality and longevity of roofing, flashing, and accessory components. Notify the A/E of all deficiencies.
- B. Do not proceed with the work until all deficiencies have been corrected to the satisfaction of the A/E and the roofing manufacturer.

#### 3.03 PREPARATION

- A. Ensure that all surfaces are clean and dry before starting and during performance of work.
- B. Verify that all work of other contractors and subcontractors which penetrates the roof deck or requires workers and equipment to traverse the roof deck has been completed.

#### 3.04 INSTALLATION

- A. Install the roof insulation with end joints staggered at mid-point in each layer. Offset all joints between layers a minimum of six inches.
  - 1. Attach insulation per manufacturer's recommendations.
- B. Install the roofing and flashing system and all accessory items in accord with the manufacturer's printed instructions.
- C. Weld all field seams using the manufacturer's approved welding equipment and in accord with the manufacturer's recommendations.
- D. Installation of Ancillary Components if applicable
- E. Reinstallation of temporarily removed items if applicable

#### 3.05 FIELD QUALITY CONTROL

- A. The A/E will provide onsite observation during installation.

- B. The roofing manufacturer will provide onsite observation and instruction as they deem necessary.

### 3.06 ADJUST AND CLEAN

- A. Carefully inspect all completed work and correct all defects.
- B. Remove from the job site and legally dispose of all debris.
- C. Remove all tools, equipment, and construction aids.
- D. Prevent storage of materials and equipment on the completed roof.
- E. Accompany the manufacturer's technical inspector and assist with equipment and workmen if necessary to provide access to the roof. Correct all defects noted during the inspection.

DIVISION 07 - THERMAL & MOISTURE PROTECTION  
**Section 07 61 00 - Roof Coping**

**1. GENERAL**

**1.01 SECTION INCLUDES**

A. Base Bid, General Contractor provide:

1. Furnish and install metal flashing, coping and accessories as indicated.

**1.02. RELATED SECTIONS:**

A. Section 07 92 00 - Joint Sealants

**1.03 REFERENCES**

A. American Society for Testing and Materials (ASTM):

1. A526 - Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Commercial Quality
2. A755 - Specification for Steel Sheet, Metallic-Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products
3. B32 - Specification for Solder Metal

**1.04 SUBMITTALS**

- A. Product Data: Submit manufacturer's material and finish data, installation instructions and general recommendations for specified flashing and coping product.
- B. Submit manufacturer's color charts and texture variations for specified sheet materials to be exposed as finished surfaces.

**1.05 QUALITY ASSURANCE**

- A. Installer Qualifications: Engage an experienced installer who has completed flashing, sheet metal and trim work similar in material, design and extent to that indicated for project and have resulted in construction with a record of successful in-service performance.
- B. Quality Standard: Fabricate and install sheet metal work in accordance with Sheet Metal and Air Conditioning Contractor's National Association, Inc. (SMACNA) "Architectural Sheet Metal Manual.
- C. Wind Resistance: Fabricate and install coping at edges of roof in accordance with FM Loss Prevention Data Sheet 1-49 for specified wind zone. Ensure that substrate construction is also in compliance.
- D. Thermal Movements: Provide sheet metal coping and trim that allow for thermal movements in accordance to local temperature ranges. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

## SECTION 07 61 00-2

- E. Water Filtration: Provide sheet metal coping and trim that do not allow water infiltration to building interior.

### 1.06 WARRANTY

- A. Five (5) year manufacturer's water tight warranty.
- B. Manufacturer's standard twenty (20) year finish warranty.

## 2. PRODUCTS

### 2.01 MATERIALS

- A. Prepainted, Coil-Coated Galvanized Steel Sheet: Zinc-coated, commercial quality steel sheet conforming to ASTM A755, G90 coating designation, coil-coated with high performance fluoropolymer coating.

1. Finish: Coil-coated factory finish "Kynar 500" or "Hylar 5000".
2. Color: Selected from manufacturer's standard color selection.

### 2.02 MISCELLANEOUS MATERIALS AND ACCESSORIES

- A. Solder: For use with steel, furnish lead-free solder complying with ASTM B32, with rosin flux.
- B. Fasteners: Same metal as sheet metal flashing or other noncorrosive metal as recommended by sheet metal manufacturer. Match finish of exposed heads with material being fastened.
- C. Mastic Sealants: Polyisobutylene; Nonhardening, nonskinning, nondrying, nonmigrating sealant.
- D. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of work, matching or compatible with material being installed; Noncorrosive; Size and thickness required for performance.
- E. Installation Accessories: Provide joint tape, adhesives, sealers, and fasteners as recommended by coping manufacturer for indicated applications.
- F. Bituminous Coating: Heavy bodied, sulfur-free, asphalt-based paint; FS TT-C-494.

### 2.03 FABRICATION

- A. Sheet metal fabrication standard: Fabricate sheet metal coping and trim to comply with recommendation of SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal and other characteristics of the item indicated.
- B. Comply with details shown to fabricate sheet metal coping and trim that fit substrates and result in waterproof and weather resistant performance once installed. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- C. Form exposed sheet metal work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems.

## SECTION 07 61 00-3

- D. Seams: Fabricate nonmoving seams in sheet metal flat-lock seams.
- E. Sealed Joints: Form nonexpansion, but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
- F. Expansion Provisions: Space movement joints at maximum of 10 feet with no joints allowed within twenty-four (24) inches of corner or intersection.
- G. Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact with asphalt mastic or other permanent seapration as recommended by manufacturer.
- H. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of sheet metal exposed to public view.
- I. Fabricate cleats and attachment devices from same material as sheet metal component being anchored or from compatible noncorrosive metal recommended by SMACNA or sheet metal manufacturer.
- J. Form a one-half inch hem on underside of exposed edges.

### 2.04 SHEET METAL FABRICATORS

- A. Formed copings and scuppers:
  - 1. Galvanized Steel Sheet: 24 gage
- B. Miscellaneous Flashings:
  - 1. Galvanized Steel Sheet: 24 gage

## 3. EXECUTION

### 3.01 EXAMINATION

- A. Examine substrates and conditions under which sheet metal coping and trim are to be installed and verify that work may properly commence. Do not proceed with installation until satisfactory conditions have been corrected.

### 3.02 PREPARATION

- A. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

### 3.03 INSTALLATION

- A. General: Unless otherwise indicated, install sheet metal coping and trim to comply with performance requirements, manufacturer's installation instructions and SMACNA's "Architectural Sheet Metal Manual". Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; Conceal fasteners where possible and set units true to line and level as indicated. Install work with laps, joints and seams that will be permanently watertight and weatherproof.

## SECTION 07 61 00-4

- B. Install exposed sheet metal work that is without excessive oil canning, buckling and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal coping and trim to fit substrates and to result in waterproof and weather-resistant performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- C. Sealed joints: Form nonexpansion, but moveable joints in metal to accommodate elastomeric sealant to comply with SMACNA standards. Fill joint with sealant and form metal to completely conceal sealant.
  - 1. Use joint adhesive for nonmoving joints specified not to be soldered.
  - 2. Moving Joints: When ambient temperature is moderate at time of installation, set joined members for 50 percent movement either way. Adjust setting position of joined members proportionally for temperatures about 70° F. Do not install sealant at temperatures below 40° F.

### 3.04 CLEANING AND PROTECTION

- A. Remove protective film from prefinished sheet metal immediately after installation.
- B. Repair or replace work which is damaged or defective.
  - 1. Refinish marred and abraded areas of prefinished sheet metal using finish manufacturer's recommended methods and materials. Replace units which cannot satisfactorily be refinished in place.
- C. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.
- D. Provide final protection and maintain conditions that ensure sheet metal flashing and trim work during construction is without damage or deterioration other than by natural weathering.



DIVISION 07 - THERMAL AND MOISTURE PROTECTION  
**Section 07 71 23 - Aluminum Fascia, Soffit, Gutters and  
Downspouts**

1. GENERAL

1.01 SECTION INCLUDES

- A. Base Bid, General Contractor provide:
  - 1. Aluminum fascia and soffit system.
  - 2. Aluminum gutters and downspouts.
  - 3. Precast concrete splash blocks.

1.02 RELATED SECTIONS

- A. Section 07 50 00 - PVC Membrane Roofing.

1.03 REFERENCES

- A. ASTM B209 - Aluminum and Aluminum Alloy Sheet and Plate.
- B. FS TT-C-494 - Coating Compound, Bituminous, Solvent Type, Acid Resistant.
- C. SMACNA - Architectural Sheet Metal Manual.

1.04 SUBMITTALS

- A. Product Data: Provide manufacturer's data sheets on all products to be used.
- B. Shop Drawings: Provide shop drawings showing profiles of each product to be used. Field verify existing conditions to be matched.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and protect products under provisions of Section 01 66 00.
- B. Stack preformed and prefinished material to prevent twisting, bending, or abrasion, and to aid ventilation. Slope to drain.
- C. Prevent contact with materials during storage which may cause discoloration, staining, or damage.

1.06 WARRANTY

- A. Provide manufacturer's standard five (5) year warranty for installation and materials.
- B. Manufacturer's standard twenty (20) year finish warranty.

2. PRODUCTS

2.01 SOFFIT AND FASCIA

## SECTION 07 71 23-2

- A. Soffit: Rollex, Acrylic Aluminum, 16" vented panels, .019" thickness, color by Owner.
- B. Fascia: Rollex, Acrylic Aluminum, ribbed timbertex, with matching nails, color by Owner.
- C. Substitutions in accordance with Section 01 26 00.

### 2.02 GUTTERS AND DOWNSPOUTS

- A. Aluminum Sheet: ASTM B209, aluminum alloy; .032" thickness, shop prefinished, color to match fascia and soffit.
- B. Gutters: Rectangular SMACNA style profile, 6"x6".
- C. Downspouts: Square profile, 4"x4".
- D. End Caps, Downspout Outlets, Gutter Support Brackets, Joint Fasteners, Downspout Strainers: Profiled to suit gutters and downspouts.
- E. Aluminum leaf basket over each downspout.
- F. Splash Blocks: Precast concrete type, where indicated on the drawings.

### 2.03 ACCESSORIES

- A. Anchorage Devices: Type recommended by fabricator.
- B. Gutter Supports: Brackets.
- C. Downspout Supports: Straps.

### 2.04 FABRICATION

- A. Form gutter and downspout profiles to SMACNA requirements.
- B. Field measure site conditions prior to fabricating work.
- C. Fabricate with required connection pieces.
- D. Form sections square, true, and accurate in size, in maximum possible lengths and free of distortion or defects detrimental to appearance or performance.
- E. Hem exposed edges of metal.
- F. Fabricate gutter and downspout accessories; seal watertight.

## 3. EXECUTION

### 3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work and conditions are as instructed by the manufacturer.

## SECTION 07 71 23-3

- B. Beginning of installation means acceptance of existing conditions.

### 3.02 INSTALLATION

- A. Install gutters, downspouts, fascia, soffit and accessories in accordance with manufacturer's instructions.
- B. Join lengths with seams sealed watertight. Flash and seal gutters to downspouts and accessories.
- C. Seal metal joints watertight.
- D. Provide elbow fitting at bottom of each downspout.
- E. Set splash blocks under downspouts when indicated.
- F. Slope gutters minimum 1/2" in thirty (30) feet.

END

07 71 23-3

DIVISION 07 - THERMAL AND MOISTURE PROTECTION  
**Section 07 92 00 - Joint Sealants**

**1. GENERAL**

**1.01 SECTION INCLUDES**

- A. Base Bid, General Contractor provide:
  - 1. Preparing sealant substrate surfaces.
  - 2. Sealant and backing.

**1.02 RELATED SECTIONS**

- A. Section 03 30 00 - Cast-In-Place Concrete.
- B. Section 08 11 00 - Metal Doors and Frames.
- C. Section 08 51 13 - Aluminum Windows
- D. Division 22 - Plumbing Systems.

**1.03 REFERENCES**

- A. ANSI/ASTM D1565 - Flexible Cellular Materials - Vinyl Chloride Polymers and Copolymers.
- B. ASTM C790 - Use of Latex Sealing Compounds.
- C. ASTM C804 - Use of Solvent-Release Type Sealants.
- D. FS TT-C-00598 - Caulking Compound, Oil and Resin Base Type.
- E. FS TT-S-00230 - Sealing Compound: Elastomeric Type, Single Component.
- F. FS TT-S-001543 - Sealing Compound, Silicone Rubber Base.
- G. SWI (Sealing and Waterproofers Institute) - Sealant and Caulking Guide specification.
- H. ASTM 6309 - Use of Silicone Sealing Compounds.

**1.04 SUBMITTALS**

- A. Submit product data indicating sealant chemical characteristics, performance criteria, limitations, and color availability.

**1.05 QUALITY ASSURANCE**

- A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum three (3) years experience.
- B. Applicator: Company specializing in applying the work of this Section with minimum three years experience.

## SECTION 07 92 00-2

### 1.06 ENVIRONMENTAL REQUIREMENTS

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

## 2. PRODUCTS

### 2.01 SEALANTS

- A. Oil Based: FS TT-C-00598, single component; Type I, color as selected.
- B. Acrylic Emulsion Latex: ASTM C834, single component; color as selected.
- C. Polyurethane Sealant: FS TT-S-00230, Type II - non-sag, Class A; color as selected.
- D. Silicone Sealant: Single component, fungus resistant, chemical curing, non-sagging, non-staining, non-bleeding; color as selected.

Elongation Capability	25 percent
Service Temperature Range	-65 to 180° F
Shore a Hardness Range	15 to 25

- E. Silicone Sealer: ASTM 6309 Type I, Class A, low modulus type; clear.

### 2.02 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: ANSI/ASTM D1056; round, closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width.

## 3. EXECUTION

### 3.01 EXAMINATION

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

### 3.02 PREPARATION

- A. Clean and prime joints in accordance with manufacturer's instructions. Remove loose materials and foreign matter which might impair adhesion of sealant.
- B. Verify that joint backing and release tapes are compatible with sealant.
- C. Perform preparation in accordance with ASTM C804 for solvent release and C790 for latex base sealants.

## SECTION 07 92 00-3

- D. Protect elements surrounding the work of this Section from damage or disfiguration.

### 3.03 INSTALLATION

- A. Install sealant in accordance with manufacturer's instructions.
- B. Measure joint dimensions and size materials to achieve required width/depth ratios.
- C. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width.
- D. Install bond breaker where joint backing is not used.
- E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Tool joints concave.

### 3.04 CLEANING AND REPAIRING

- A. Clean adjacent soiled surfaces.
- B. Repair or replace defaced or disfigured finishes caused by work of this Section.

### 3.05 SCHEDULE

<u>Location</u>	<u>Type</u>	<u>Color</u>
A. Exterior wall applications	Silicone sealant	To match
B. Exterior concrete stoops	Silicone sealer	Clear
C. Gutters and exterior metal	Oil based	To match
D. Interior door and window frames/wall	Acrylic emulsion latex	White
E. Plumbing fixtures to walls	Acrylic emulsion latex	White
F. Interior exposed concrete floor	Silicone sealer	Clear
G. Concrete control joints	Polyurethane sealant	Gray
H. Masonry sun facing joints	Polyurethane sealant	To match

END

07 92 00-3

DIVISION 08 - OPENINGS  
**Section 08 11 00 - Metal Doors and Frames**

**1. GENERAL**

**1.01 SECTION INCLUDES**

- A. Base Bid, General Contractor provide:
  - 1. Non-rated and fire-rated rolled steel doors and frames.

**1.02 RELATED WORK**

- A. Section 08 14 00 - Wood Doors
- B. Section 08 71 00 - Door Hardware.
- C. Section 09 91 00 - Painting.

**1.03 REFERENCES**

- A. ASTM E152 - Methods of Fire Tests of Door Assemblies.
- B. DHI - Door Hardware Institute: The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Steel Frames and Builder's Hardware.
- C. NFPA 80 - Fire Doors and Windows.
- D. NFPA 252 - Fire Tests for Door Assemblies.
- E. SDI-100 - Standard Steel Doors and Frames.
- F. SDI-105 - Recommended Erection Instructions for Steel Frames.
- G. UL 10B - Fire Tests of Door Assemblies.

**1.04 QUALITY ASSURANCE**

- A. Conform to requirements of SDI-100.
- B. Fire rated door and frame construction to conform to ASTM E152.
- C. Installed frame and door assembly to conform to NFPA 80 for fire rated class indicated on Drawings.

**1.05 REGULATORY REQUIREMENTS**

- A. Conform to applicable code for fire rated frames and doors.

**1.06 SUBMITTALS**

- A. Submit shop drawings and product data. Indicate frame configuration, anchor types and spacings, location of cutouts for hardware, reinforcement, and finish.
- B. Indicate door elevations, internal reinforcement, closure method.

## SECTION 08 11 00-2

### 1.07 DELIVERY, STORAGE AND PROTECTION

- A. Deliver, store and protect doors and frames under provisions of Section 01 66 00. Protect doors and frames with resilient packaging.
- B. Break seal on-site to permit ventilation.

### 1.08 WARRANTY

- A. Provide five (5) year manufacturer's warranty.

## 2. PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS

- A. Steelcraft.
- B. CECO Door Products.
- C. Substitutions: Under provisions of Section 01 26 00.

### 2.02 DOORS AND FRAMES

- A. Exterior Frames: 16 gage thick material, core thickness.
- B. Interior Frames: 16 gage thick material, core thickness.
- C. Exterior Doors: 16 gage thick material, core thickness.
- D. Interior Doors: 18 gage thick material, core thickness.

### 2.03 DOOR CORE

- A. Core: Manufacturers standard insulating material.

### 2.04 ACCESSORIES

- A. Rubber Silencers; Resilient rubber.

### 2.05 FABRICATION

- A. Fabricate frames as fully or continuously welded unit.
- B. Fabricate frames and doors with hardware reinforcement plates welded in place.
- C. Prepare frame for silencers. Provide three single rubber silencers for single doors on strike side.
- D. Attach fire rated label to each frame and door unit.
- E. Close top edge of exterior door flush with inverted steel channel closure. Seal joints watertight.



## SECTION 08 11 00-3

- F. Configure exterior frames with special profile to provide thermal break.
- G. Fabricate frames for masonry wall coursing with 4 inch head member.

### 2.06 FINISH

- A. Interior Units: 0.60 oz standard.
- B. Exterior Units: 0.60 oz galvanized.
- C. Primer: Baked on.

## 3. EXECUTION

### 3.01 INSTALLATION

- A. Install frames in accordance with SDI - 105.
- B. Install doors in accordance with DHI.
- C. Coordinate with masonry and wallboard wall construction for anchor placement.

### 3.02 TOLERANCES

- A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

### 3.03 ADJUSTING AND CLEANING

- A. Adjust hardware for smooth and balanced door movement.

DIVISION 08 - OPENINGS  
**Section 08 14 00 - Wood Doors**

1. GENERAL

1.01 SECTION INCLUDES

- A. Base Bid, General Contractor provide:
  - 1. Wood doors and hollow metal frames.

1.02 RELATED WORK

- A. Section 06 20 00 - Finish Carpentry.
- B. Section 08 11 00 - Metal Doors and Frames.
- C. Section 08 71 00 - Door Hardware.
- D. Section 09 91 00 - Painting.

1.03 REFERENCES

- A. ANSI/NWMA I.S.1 - Industry Standard For Wood Flush Doors.
- B. ASTM E90 - Measurement of Airborne Sound Transmission Loss of Building Partitions.
- C. AWI - Quality Standards of Architectural Woodwork Institute.

1.04 QUALITY ASSURANCE

- A. Conform to requirements of AWI Quality Standard Section 1300 and 1400 Premium Grade.

1.05 SUBMITTALS

- A. Submit shop drawings and product data. Indicate door elevations, door construction and hardware attachment.
- B. Submit manufacturer's installation instructions under provisions of Section 01 33 23.

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver, store and protect products under provisions of Section 01 66 00.
- B. Protect doors with resilient packaging.
- C. Store doors in accordance with ANSI/AWMA requirements.

1.07 WARRANTY

- A. Provide five (5) year manufacturer's warranty under provisions of 01 78 36.

2. PRODUCTS

2.01 DOOR TYPES

08 14 00-1

## SECTION 08 14 00-2

- A. Flush Interior Doors: 1-3/4 thick; solid core construction; Red Oak wood veneer faces.

### 2.02 DOOR CONSTRUCTION

- A. Solid, Non-Rated Core: AWI Section 1300.

### 2.03 FLUSH DOOR FACING

- A. Facing Quality: AWI premium grade.
- B. Flush Interior Door Veneer: Red Oak species wood, rotary sliced with pair matched grain, for transparent finish.

### 2.04 ADHESIVES

- A. Manufacturers Standard Waterproof Laminate Adhesive, URAX 185 or 186.

### 2.05 FABRICATION

- A. Fabricate non-rated doors in accordance with AWI Quality Standards.
- B. Provide flush doors with 1/2 inch thick edge strips of wood species to match face veneer.
- C. Pre-machine doors for finish hardware.

## 3. EXECUTION

### 3.01 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions.
- B. Machine cut relief for hinges and closers and coring for handsets and cylinders.
- C. Trim door width by cutting equally on both jamb edges to a maximum of 3/16 inch.
- D. Trim door height by cutting equally on top and bottom edges to a maximum of 3/4 inch.
- E. Pilot drill screw and bolt holes.
- F. Prepare doors to receive finish hardware in accordance with AWI requirements.
- G. Conform to AWI requirements for fit tolerances.

### 3.02 INSTALLATION TOLERANCES

- A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

### 3.03 ADJUSTING AND CLEANING

- A. Adjust for smooth and balanced door movement.

END

08 14 00-2

DIVISION 08 - OPENINGS  
**Section 08 51 13 - Aluminum Windows**

**1. GENERAL**

**1.01 SECTION INCLUDES**

- A. Base Bid, General Contractor provide:
  - 1. Shop fabricated aluminum casement window units with weatherstripping.

**1.02 RELATED WORK**

- A. Section 07 21 00 - Thermal Insulation.
- B. Section 07 92 00 - Joint Sealants.

**1.03 REFERENCES**

- A. ANSI/ASTM E283 - Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors.
- B. ANSI/ASTM E330 - Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
- C. ANSI/ASTM E331 - Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.

**1.04 SYSTEM PERFORMANCE**

- A. Conform to performance requirements of NWWDA I.S.-2, Grade 60.
- B. Air Leakage: ANSI/ASTM E283; .03 cu ft/min/ft of installed window unit.
- C. Water Penetration of Installed Window Unit: None when subjected to ANSI/ASTM E331 under static pressure of 6.24 lb/sq ft for three (3) cycles of five (5) minutes each at a rate of five (5) gallons per hour, per square foot.
- D. Wind and Suction Loads Acting Normal to Plane of Window Unit: In accordance with ASTM E330.

**1.05 SUBMITTALS**

- A. Submit shop drawings and product data under provisions of Section 01 33 23. Include dimensions, relation to construction of adjacent work, air and vapor barrier seal to adjacent construction, component anchorage and locations, anchor methods and materials, and hardware installation details.

**1.06 WARRANTY**

- A. Provide ten (10) year manufacturer's warranty under provisions of Section 01 78 36.
- B. Warranty: Include coverage of insulating glass units or de-lamination and deterioration of finish.

## SECTION 08 51 13-2

### 2. PRODUCTS

#### 2.01 ACCEPTABLE MANUFACTURERS

- A. Kawneer Architectural Windows.
- B. Tubelite Windows.
- C. Manko Windows.
- D. Substitutions in accordance with Section 01 26 00.

#### 2.02 WINDOW UNITS

- A. Type: Fixed window unit, thermally broken.
- B. Glass: One inch (1") Insulated glazing, medium bronze tint.

#### 2.03 MATERIALS

- A. Aluminum: Extruded aluminum profiles shall be 6063 T5 alloy and temper ASTM B221 G. S. 10A-T5.
- B. Frames to be 4 ½" x 2" with .90" wall thickness, thermally broken.
- C. Insulating Glass: Double glazing units with bronze tint and low emissivity glass.
- D. Screens: Black fiberglass, one per operating sash.

#### 2.04 FABRICATION

- A. Fabricate units to fit tightly and securely into wall openings.
- B. Form sills and stools in one piece. Slope sills for wash.
- C. Size window units to allow for tolerances of rough framed openings, clearances, and shim spacing around perimeter of assemblies.
- D. Provide drainage to exterior for moisture control.

#### 2.05 HARDWARE

- A. Projecting Sash: Zinc or cadmium plated steel arms, friction pivot joints with nylon bearings, removable pivot clips for cleaning.
- B. Operator: Geared rotary handle fitted to zinc or cadmium plated steel arms with limit stops.
- C. Sash locks: Lever handle with cam lock.

#### 2.06 FINISHES

## SECTION 08 51 13-3

- A. Anodized finish, dark bronze.

### 3. EXECUTION

#### 3.01 INSPECTION

- A. Verify rough openings are correctly sized and located.
- B. Beginning of installation means acceptance of existing conditions.

#### 3.02 PREPARATION

- A. Prepare opening to permit correct installation of window unit.

#### 3.03 INSTALLATION

- A. Install windows in accordance with manufacturer's instructions.
- B. Maintain alignment with adjacent work. Secure assembly to frame openings without distortion or stress.
- C. Install sealant and related backing materials at exterior and interior of installed assembly as specified in Section 07 92 00.
- D. Install perimeter trim and closures.

#### 3.04 TOLERANCES

- A. Plumb and Level: Plus or minus one-eighth inch (1/8") from true measurement.
- B. Longitudinal or Diagonal Warp: Plus or minus one-eighth inch (1/8") from 10 foot straight edge.

#### 3.05 CLEANING

- A. Clean window frames and glass.
- B. Remove labels and visible markings.

DIVISION 08 - OPENINGS  
**Section 08 71 00 - Door Hardware**

**1. GENERAL**

**1.01 SECTION INCLUDES**

- A. Base Bid, General Contractor provide:
  - 1. Hardware for wood and hollow steel doors.
  - 2. Thresholds, gasketing.

**1.02 RELATED SECTIONS**

- A. Section 08 11 00 - Metal Doors and Frames.
- B. Section 08 14 00 - Wood Doors.

**1.03 REFERENCES**

- A. ANSI A117.1 - Standard for Accessible and Usable Buildings and Facilities.
- B. ANSI/NFPA 80 - Fire Doors and Windows.
- C. AWI - Architectural Woodwork Institute.
- D. BHMA - Builders' Hardware Manufacturers Association.
- E. DHI - Door and Hardware Institute.
- F. NAAMM - National Association of Architectural Metal Manufacturers.
- G. NFPA 101 - Life Safety Code.
- H. SDI - Steel Door Institute.

**1.04 COORDINATION**

- A. Coordinate work of this Section with other directly affected Sections involving manufacturer of any internal reinforcement for door hardware.

**1.05 QUALITY ASSURANCE**

- A. Manufacturers: Companies specializing in manufacturing door hardware with minimum three years experience.
- B. Hardware Supplier: Company specializing in supplying commercial door hardware approved by manufacturer.

**1.06 REGULATORY REQUIREMENTS**

- A. Conform to applicable code for requirements applicable to fire rated doors and frames.

## SECTION 08 71 00-2

- B. Conform to the applicable sections of Chapter 5 of NFPA 101.

### 1.07 SUBMITTALS

- A. Submit schedule, shop drawings, and product data under provisions of Section 01 33 23.
- B. Indicate locations and mounting heights of each type of hardware.
- C. Provide product data on specified hardware.

### 1.08 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data under provisions of Section 01 78 23. Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

### 1.09 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and protect products under provisions of Section 01 66 00.
- B. Deliver keys to Owner.

### 1.10 WARRANTY

- A. Provide five year warranty under provisions of Section 01 78 36.
- B. Warranty: Include coverage of door closers.

### 1.11 MAINTENANCE MATERIALS

- A. Provide maintenance tools and accessories supplied by hardware component manufacturer.

## 2. PRODUCTS

### 2.01 LOCKSETS

- A. Sargent, 7 Line Bored Lever Locks.
- B. Lever Trim, L Trim, L Rose, L Lever.
- C. Substitutions: Under provisions of Section 01 26 00.

### 2.02 CLOSERS

- A. LCN 1460 Series.
- B. Substitutions: Under provisions of Section 01 26 00.

### 2.03 HINGES

- A. Hager, BB 1279, 4 ½" x 4 ½ ", interior doors.



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- B. Hager, BB 1191, 4 ½" x 4 ½", exterior doors.
- C. Substitutions: Under provisions of Section 01 26 00.

### 2.04 PANIC DEVICES

- A. Sargent, Rim Exit Type, 8800 Series with ETL Trim.
- B. Substitutions: Under provisions of Section 01 26 00.

### 2.05 ADJUSTABLE BALL CATCH WITH STRIKE

- A. Hager, 321R, brass with steel ball, adjustable spring tension.
- B. Substitutions: Under provisions of Section 01 26 00.

### 2.06 STOPS

- A. Provide the stop as indicated or the appropriate stop for the given condition. Field verify.
- B. Hager Stops:
  - 1. 236W - wall stop, US 32 D.
  - 2. 252F - floor stop, US 32 D.
- C. Substitutions: Under provisions of Section 01 26 00.

### 2.07 THRESHOLDS

- A. ADA compliant aluminum threshold with vinyl bumper seal, 1/2" maximum overall height, widths and lengths to fit specific opening conditions.
- B. Acceptable manufacturers:
  - 1. National Guard - 896N, 950N.
  - 2. Substitutions: Under provisions of Section 01 26 00.

### 2.08 KEYING

- A. Door Locks: Individually and Master keyed, match existing keying system.
- B. Supply two (2) keys for each lock.
- C. Supply keys in the following quantities:
  - 1. Six (6) master keys.
- D. Keying schedule will be provided by the Owner during the construction period.

## SECTION 08 71 00-4

### 2.09 FINISHES

- A. Finishes are identified in Schedule at end of this Section.

### 3. EXECUTION

#### 3.01 INSPECTION

- A. Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings.
- B. Beginning of installation means acceptance of existing conditions.

#### 3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions.
- B. Use the templates provided by hardware item manufacturer.
- C. Conform to ANSI A117.1 for positioning requirements for accessibility.

#### 3.03 SCHEDULE - HARDWARE Finish US 26 D, unless noted otherwise.

Set No. 1:	#1 Door 1-1/2 pair butts Panic device, entrance function Closer Weatherstrip Threshold Floor stop	md mf - Exit
Set. No. 2:	#2, #3 Doors 1-1/2 pair of butts Lockset, Privacy function Closer Wall stop	wd mf - Toilet
Set No. 3:	#4 Doors 1-1/2 pair of butts Lockset, Passage function Closer Wall stop	wd mf - Council
Set No. 4:	#5 Door 1-1/2 pair of butts, NRP Lockset, storeroom function Closer	md mf - Mechanical

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- |  |                  |
|--|------------------|
| Set No. 5: #6 Double Doors               | wd mf - Storage  |
| 1-1/2 pair of butts, each leaf           |                  |
| Adjustable catch ball at head, each leaf |                  |
| Lockset, double lever pull, each leaf    |                  |
| Wallstop, left hand leaf                 |                  |
| <br>Set No. 6: #7 Door                   | wd mf - Corridor |
| 1-1/2 pair of butts                      |                  |
| Panic device, Entrance function          |                  |
| Closer                                   |                  |

END

08 71 00-5

DIVISION 08 - OPENINGS  
**Section 08 80 00 - Glazing**

1. GENERAL

1.01 SECTION INCLUDES

- A. Base Bid, General Contractor provide:
  - 1. Glass and glazing for exterior doors and sidelights.
  - 2. Glass and glazing for interior doors.
  - 3. Glazing accessories.

1.02 RELATED SECTIONS

- A. Section 08 11 00 - Metal Doors and Frames.
- B. Section 08 14 00 - Wood Doors.

1.03 REFERENCES

- A. ANSI Z97.1 - Performance Specifications and Methods of Testing for Safety Glazing Materials used in Building.
- B. ASTM C1036 - Flat Glass
- C. ASTM C1048 - Heat Treated Flat Glass - Kind HS, Kind FT, coated and uncoated glass.
- D. ASTM E773 - Test Method for seal Durability of Sealed Insulating Glass Units.
- E. Flat Glass Marketing Association - Glazing Manual and Sealant Manual.

1.04 SUBMITTALS

- A. Submit product data and shop drawings indicating glazing materials, installation methods and accessories.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Support glass on Neoprene separators. Do not mark, coat, or tape on tinted glass.

1.06 WARRANTY

- A. Manufacturer's standard ten (10) year warranty. Loss of seal/delamination.

2. PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. American Saint Gobain.
- B. Pilkington North America.

## SECTION 08 80 00-2

- C. Pittsburgh Plate Glass (PPG Industries).
- D. Technical Glass Products.
- E. Substitutions in accordance with Section 01 26 00.

### 2.02 GLASS AND GLAZING

- A. Exterior Door and Sidelight Insulated Tempered Safety Glass: Heat strengthened, F.S. DD-G-001403; 1/4" float glass, clear inside; 1/4" float glass, bronze heat absorbing exterior; 1/2" air space.
- B. Interior Door Glass: 1/4" tempered safety glass, clear.

### 2.03 ACCESSORIES

- A. Glazing Tape: Tremco Polyisobutylene Butyl, GE Siliglaze PVC, or equal, fire rated for wire glass and fire rated glazing.
- B. Sealant: One part acrylic terpolymer, Siliglaze, or equal.
- C. Shims, Spacers, Setting Blocks: Neoprene.

## 3. EXECUTION

### 3.01 INSTALLATION

- A. Clean sash of foreign materials.
- B. Install glass in sash in accordance with Flat Glass Jobbers Association Glazing Manual.
- C. Apply tape to permanent stops, full length. Butt at corners, do not lap.
- D. Place spacers, if required, and setting blocks at quarter points.
- E. Set glass, press into tape.
- F. Apply sealant heel bead.
- G. Install removable stop.
- H. Replace improperly set glass and any broken glass in executing the work of this section, at no cost to the Owner.

### 3.02 CLEANING

- A. Clean all glazing and frames upon completion of installation.

END

08 80 00-2

DIVISION 09 - FINISHES  
**Section 09 21 16 - Gypsum Board System**

1. GENERAL

1.01 SECTION INCLUDES

A. Base Bid. General Contractor provide:

1. Gypsum board.
2. Taped and sanded joint treatment.

1.02 RELATED SECTION

- A. Section 07 21 00 - Thermal Insulation.
- B. Section 08 11 00 - Metal Doors and Frames.
- C. Section 08 14 00 - Wood Doors
- D. Section 09 91 00 - Painting.

1.03 REFERENCES

- A. ANSI/ASTM C1396 - Gypsum Wallboard.
- B. ANSI/ASTM C475 - Joint Treatment Materials for Gypsum Wallboard Construction.
- C. ANSI/ASTM C754 - Installation of Framing Members to Receive Screw Attached Gypsum Wallboard, Backing Board, or Water Resistant Backing Board.
- D. ANSI/ASTM E119 - Fire Tests of Building Construction and Materials.
- E. GA-201 - Gypsum Board for Walls and Ceilings.
- F. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board.

1.04 QUALITY ASSURANCE

- A. Applicator: Company specializing in gypsum board systems work with three years experience.

2. PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - GYPSUM BOARD SYSTEM

- A. United States Gypsum Co.
- B. National Gypsum Co.
- C. Georgia - Pacific Gypsum Co.
- D. Substitutions: Under provisions of Section 01 26 00.

## SECTION 09 21 16-2

### 2.02 GYPSUM BOARD MATERIALS

- A. Fire Rated Gypsum Board: ANSI/ASTM C1396; fire resistive type, UL rated; 5/8 inch thick, maximum permissible length; ends square cut, tapered edges.
- B. Moisture Resistant Fire Rated Gypsum Board: ANSI/ASTM C630; moisture resistant type; ANSI/ASTM C1396; fire resistant type; 5/8 inch thick, maximum permissible length; ends square cut, tapered edges.

### 2.03 ACCESSORIES

- A. Corner Beads: Metal.
- B. Edge Trim: GA 201 and GA 216; Type LC bead.
- C. Joint Materials: ANSI/ASTM C475; reinforcing tape, joint compound, adhesive, water, and fasteners.

## 3. EXECUTION

### 3.01 INSPECTION

- A. Verify that site conditions are ready to receive work and opening dimensions are as indicated on shop drawings.
- B. Beginning of installation means acceptance of existing surfaces.

### 3.02 GYPSUM BOARD INSTALLATION

- A. Install gypsum board in accordance with manufacturer's instructions.
- B. Erect single layer gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- C. Erect single layer fire rated gypsum board vertically, with edges and ends occurring over firm bearing.
- D. Use screws when fastening gypsum board to wood framing.
- E. Double Layer Applications: Use fire rated gypsum backing board for fire rated partitions. Place second layer parallel to first layer. Offset joints of second layer from joints of first layer.
- F. Extend all layers of gypsum board from floor to underside of roof/ceiling structure where shown in drawings. Provide level 3 finish above suspended ceiling.
- G. Seal all openings and penetrations.

### 3.03 JOINT TREATMENT

- A. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes. Provide a level 4 finish.

SECTION 09 21 16-3

- B. Feather coats onto adjoining surfaces so that camber is maximum  $1/32$  inch.

3.04 TOLERANCES

- A. Maximum Variation from True Flatness:  $1/8$  inch in 10 feet in any direction.

END

09 21 16-3



DIVISION 09 - FINISHES  
**Section 09 65 13 - Resilient Base and Accessories**

**1. GENERAL**

**1.01 SECTION INCLUDES**

- A. Base Bid, General Contractor provide:
  - 1. Rubber base.
  - 2. Accessories to install a complete rubber base system.

**1.02 RELATED SECTIONS**

- A. Section 09 21 16 - Gypsum Board System.
- B. Section 09 65 16 - Resilient Plank Vinyl Flooring

**1.03 REFERENCES**

- A. ASTM E 84 - Surface Burning Characteristics of Building Materials.
- B. FS SS-W-40 - Wall Base: Rubber.

**1.04 REGULATORY REQUIREMENTS**

- A. Conform to applicable code for flame/fuel/smoke rating requirements in accordance with ASTM E 84.

**1.05 SUBMITTALS**

- A. Provide product data on specified products, describing physical and performance characteristics, sizes, patterns and samples for selection.

**1.06 ENVIRONMENTAL REQUIREMENTS**

- A. Store materials for three days prior to installation in area of installation to achieve temperature stability.
- B. Maintain ambient temperature required by adhesive manufacturer three days prior to, during, and 24 hours after installation of materials.

**1.07 EXTRA MATERIALS**

- A. Provide six (6) lineal feet of base of each material specified under provisions of Section 01 77 19.

**1.08 WARRANTY**

- A. Free of manufacturing defects for five (5) years.

**2. PRODUCTS**

## SECTION 09 65 13-2

### 2.01 MANUFACTURERS - RUBBER BASE MATERIALS

- A. Roppe.
- B. Johnsonite.
- C. Azrock.
- D. Substitutions: Under provisions of Section 01 26 00.

### 2.02 BASE MATERIALS

- A. Base: FS SS-W-40; Type I rubber; four (4) inches high; one-eighth inch (1/8") thick; top set coved; premolded external corners, color by Owner.
- B. Base Accessories: Premolded end stops and external corners, of same material, size, and color as base, color by Owner.

### 2.03 ACCESSORIES

- A. Primers and Adhesives: Waterproof; types recommended by base manufacturer.

## 3. EXECUTION

### 3.01 EXAMINATION

- A. Verify that surfaces are smooth and flat with maximum variation of one-eighth inch (1/8") in 10 feet, and are ready to receive work.
- B. Beginning of installation means acceptance of existing substrate and site conditions.

### 3.02 PREPARATION

- A. Vacuum clean substrate.

### 3.03 INSTALLATION - BASE MATERIAL

- A. Fit joints tight and vertical. Maintain minimum measurement of 1/32 inch between joints.
- B. Miter internal corners. At external corners, use premolded units. At exposed ends use premolded units.
- C. Install base on solid backing. Bond tight to wall and floor surfaces.
- D. Scribe and fit to door frames and other interruptions.

### 3.04 CLEANING

- A. Remove excess adhesive from base and wall surfaces without damage.
- B. Clean base surfaces in accordance with manufacturer's instructions.

DIVISION 09 - FINISHES

**Section 09 65 16 - Resilient Plank Vinyl Flooring**

**1. GENERAL**

**1.01 SECTION INCLUDES**

- A. Base Bid, General Contractor provide:
  - 1. Resilient plank vinyl flooring.
  - 2. All accessories for a complete plank vinyl flooring system.

**1.02 RELATED SECTIONS**

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

**1.03 QUALITY ASSURANCE**

- A. Installer to have three years minimum experience in the installation of the manufacturer's resilient plank flooring.

**1.04 SUBMITTALS**

- A. Provide product data on specified products, describing physical and performance characteristics, sizes, patterns and samples for selection.
- B. Provide maintenance instructions for flooring and accessories.

**1.05 ENVIRONMENTAL REQUIREMENTS**

- A. Store materials for three days prior to installation in area of installation to achieve temperature stability.
- B. Maintain ambient temperature required by adhesive manufacturer three days prior to, during, and 24 hours after installation of materials.
- C. Do not install flooring over concrete slab until it is sufficiently cured to achieve proper bond with adhesive, in accordance to manufacturers' recommended bond and moisture tests.

**1.06 EXTRA MATERIALS**

- A. Provide 40 sq. ft. of flooring of each material specified under provisions of Section 01 77 19.

**1.07 WARRANTY**

- A. Provide 10-year manufacturer's warranty.

**2. PRODUCTS**

**2.01 MANUFACTURERS - RESILIENT PLANK FLOORING**

## SECTION 09 65 16-2

- A. Adore Naturelle Planks - design base.
- B. Johnsonite/Tarket.
- C. Substitutions: Under provisions of Section 01 26 00.

### 2.02 PLANK VINYL FLOORING

- A. Plank vinyl flooring: Color and pattern by Owner.
  - 1. 3 mm gauge thickness,
  - 2. Ceramic bead coated wear surface.
  - 3. Non-skid backing.
  - 4. Fire resistance, Class 1; Residual indentation,  $\leq$  8%; Hardness durometer, Shore A - 90 +/- 5; VOC emissions, Floor Score Certified.

### 2.03 ACCESSORIES

- A. Subfloor Filler: White premix latex; type recommended by flooring material manufacturer.
- B. Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.

## 3. EXECUTION

### 3.01 EXAMINATION

- A. Verify that surfaces are smooth and flat with maximum variation of 1/8 inch in 10 ft., and are ready to receive Work.
- B. Verify concrete floors are dry to a maximum moisture content of 85% ASTM RH, and exhibit negative alkalinity, carbonization, or dusting.
- C. Beginning of installation means acceptance of existing substrate and site conditions.

### 3.02 PREPARATION

- A. Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with subfloor filler.
- B. Apply, trowel, and float filler to leave a smooth, flat, hard surface.
- C. Prohibit traffic from area until filler is cured.
- D. Vacuum clean substrate.

### 3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

## SECTION 09 65 16-3

- B. Spread only enough pressure sensitive adhesive to permit installation of perimeter materials before initial set, 10" width min
- C. Maintain 1/8" gap from perimeter wall.
- D. Set flooring field in place. Lay flooring with joints and seams parallel to building lines to produce symmetrical patterns and minimum number of seams.
- E. Stagger plank rows to prevent end splice alignment.
- F. Terminate flooring at center line of door openings where adjacent floor finish is dissimilar.
- G. Install edge strips at unprotected or exposed edges, and where flooring terminates.
- H. Scribe flooring to walls, columns, cabinets, floor outlets, door frames and other appurtenances to produce tight joints.

### 3.04 PROTECTION

- A. Prohibit foot traffic on floor finish for 24 hours after installation. Prohibit rolling furnishings for 72 hours.

### 3.05 CLEANING

- A. Remove excess adhesive from floor and wall surfaces without damage.
- B. Clean floor surfaces in accordance with manufacturer's instructions.

DIVISION 09 - FINISHES  
**Section 09 91 00 - Painting**

**1. GENERAL**

**1.01 SECTION INCLUDES**

- A. Base Bid, General Contractor provide:
  - 1. Surface preparation and finish schedule.

**1.02 REFERENCES**

- A. ANSI/ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.
- B. ASTM D2016 - Test Method for Moisture Content of Wood.

**1.03 QUALITY ASSURANCE**

- A. Product Manufacturer: Company specializing in manufacturing quality paint and finish products with three (3) years experience.
- B. Applicator: Company specializing in commercial painting and finishing with three (3) years experience.

**1.04 REGULATORY REQUIREMENTS**

- A. Conform to applicable code for flame/fuel/smoke rating requirements for finishes.
- B. Conform to the "35 ILL. ADMIN. CODE PART 223 STANDARDS AND LIMITATIONS FOR ORGANIC MATERIAL EMISSIONS FOR AREA SOURCES" for the release of volatile organic material (VOM or VOC).

**1.05 SUBMITTALS**

- A. Deliver product data on all finishing products to the Architect for selection.

**1.06 WARRANTY**

- A. Warranty: Submit manufacturer's warranty under provisions of Section 01 78 36.

**1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver, store and protect products under provisions of Section 01 66 00.
- B. Deliver products to site in sealed and labeled containers; inspect to verify acceptance.
- C. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.
- D. Store paint materials at minimum ambient temperature of 45° F and a maximum of 90°F, in well ventilated area, unless required otherwise by manufacturer's instructions.

## SECTION 09 91 00-2

- E. Take precautionary measures to prevent fire hazards and spontaneous combustion.

### 1.08 ENVIRONMENTAL REQUIREMENTS

- A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45° F for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.
- B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent, unless required otherwise by manufacturer's instructions.
- C. Minimum Application Temperatures for Latex Paints: 45° F for interiors; 50° F for exterior; unless required otherwise by manufacturer's instructions.
- D. Minimum Application Temperature for Varnish and Urethane Finishes: 65° F for interior or exterior, unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 ft. candles measured mid-height at substrate surface.

### 1.09 EXTRA STOCK

- A. Provide a partial gallon container of each color to Owner.
- B. Label each container with color, texture, and room locations, and in addition to the manufacturer's label.

## 2. PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS - PRIMER/SEALERS AND PAINT

- A. Benjamin Moore
- B. MAB.
- C. PPG.
- D. Sherwin Williams.
- E. Substitutions: Under provisions of Section 01 26 00.

### 2.02 ACCEPTABLE MANUFACTURERS - VARNISH, URETHANE AND STAIN

- A. Minwax.
- B. Substitutions: Under provisions of Section 01 26 00.

### 2.03 MATERIALS

- A. Materials of coating systems for each type of surface shall be the manufacturer's "first line" products.

## SECTION 09 91 00-3

- B. Coatings: Ready mixed, except field catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.
- C. Coatings: Good flow and brushing properties; capable of drying or curing free of streaks or sags.
- D. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

### 2.04 FINISHES

- A. Refer to schedule at end of Section for surface finish schedule.

## 3. EXECUTION

### 3.01 INSPECTION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Beginning of installation means acceptance of existing surfaces.

### 3.02 PREPARATION

- A. Remove electrical plates, hardware, light fixture trim, and fittings prior to preparing surfaces or finishing.
- B. Correct minor defects and clean surfaces which affect work of this Section.
- C. Shellac and seal marks 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: Latex fill minor defects. Spot prime defects after repair.
- F. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- G. Uncoated Steel and Iron Surfaces: Remove grease, scale, dirt, and rust. Where heavy coatings of scale are evident, remove by wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.
- 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.



## SECTION 09 91 00-4

- I. Interior Wood Items Scheduled to Receive Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.
- J. Wood and Metal Doors Scheduled for Painting: Seal top and bottom edges with primer.

### 3.03 PROTECTION

- A. Protect elements surrounding the work of this Section from damage or disfiguration.
- B. Repair damage to other surfaces caused by work of this Section.
- C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.
- D. Remove empty paint containers from site.

### 3.04 APPLICATION

- A. Apply products in accordance with manufacturer's instructions. Do not apply finishes to surfaces that are not dry.
- B. Apply each coat to uniform finish. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.
- C. Sand lightly between coats to achieve required finish. Allow applied coat to dry before next coat is applied.
- D. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

### 3.05 CLEANING

- A. As work proceeds, promptly remove paint where spilled, splashed, or spattered.
- B. During progress of work, maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.
- C. Collect cotton waste, cloths, and material which may constitute a fire hazard. Place in closed metal containers and remove daily from site.

### 3.06 SCHEDULE - EXTERIOR SURFACES

- A. Steel - Un-primed
  - 1. One (1) coat zinc chromate primer.
  - 2. Two (2) coats alkyd enamel, semi-gloss.
- B. Steel - Shop Primed
  - 1. Touch-up with zinc chromate primer.

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2. Two (2) coats alkyd enamel, semi-gloss.

### C. Steel - Galvanized

1. One (1) coat zinc chromate primer.
2. Two (2) coats alkyd enamel, semi-gloss.

## 3.07 SCHEDULE - INTERIOR SURFACES

### A. Wood - Painted

1. One (1) coat latex primer.
2. Two (2) coats latex enamel, eggshell.

### B. Wood - Transparent

1. Filler coat for open grained wood only.
2. One (1) coat stain.
3. One (1) coat sealer.
4. Two (2) coats varnish, satin.

### C. Steel - Unprimed

1. One (1) coat zinc chromate primer.
2. Two (2) coats alkyd enamel, semi-gloss.

### D. Steel - Primed

1. Touch-up with original primer.
2. Two (2) coats alkyd enamel, semi-gloss.

### E. Steel - Galvanized

1. One (1) coat zinc chromate primer.
2. Two (2) coats alkyd enamel, semi-gloss.

### F. Gypsum Board

1. One (1) coat latex primer sealer.
2. Two (2) coats latex enamel, eggshell.

END

09 91 00-5

DIVISION 10 - SPECIALTIES  
**Section 10 14 00 - Signage**

1. GENERAL

1.01 WORK INCLUDES

- A. Base Bid, General Contractor provide:
  - 1. Exterior accessible building signage.
  - 2. Interior accessible building signage.

1.02 RELATED WORK

- A. Section 06 10 00 - Rough Carpentry.
- B. Section 09 21 16 - Gypsum Board System.

1.03 SUBMITTALS

- A. Submit shop drawings showing detailed dimensions. Layout anchorage, lettering and installation information.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle all products in a manner to prevent damage to products and the work.

2. PRODUCTS

2.01 EXTERIOR SIGNAGE

- A. Accessible Entrance Signage: GOF fiberglass panel with applied vinyl graphics and clear coat, color by Owner.
  - 1. 12" x 12" sign displaying 8" symbol of accessibility graphics.
  - 2. Fasteners: Exterior type, galvanized, of sufficient size and length for specific applications, as recommended by sign manufacturer/supplier.

2.02 INTERIOR SIGNAGE

- A. Accessible interior signage: GOF fiberglass or solid resin panel with applied vinyl graphics and clear coat, color by Owner.
  - 1. 6" x 8" sign as depicted on drawings with grade 2 Braille.
  - 2. Fasteners: As recommended by sign manufacturer/supplier.

2.03 ACCEPTABLE MANUFACTURERS

- A. ASI Sign Systems - Indianapolis, IN.

## SECTION 10 14 00-2

- B. Best Sign Systems - Montrose, CO.
- C. Champion America - Stony Creek, CT
- D. Substitutions in accordance with Section 01 26 00.

### 3. EXECUTION

#### 3.01 INSTALLATION

- A. Install building signage according to manufacturer's instructions for compliance with the ADA, using manufacturer's recommended fasteners and accessories.
- B. Verify that signs are square and plumb.

#### 3.02 ADJUST AND CLEAN

- A. Upon completion of the work, thoroughly clean signs.
- B. Remove all debris and bracing materials upon completion.

#### 3.03 SCHEDULE

##### A. ACCESSIBLE ENTRANCE SIGNS

- 1. Accessible entrance sign displaying the International Symbol of Accessibility, building exterior wall surface mounted adjacent to accessible entrance doors, approximately 60" above finish floor to centerline of sign.

##### B. ACCESSIBLE INTERIOR SIGNS

- 1. Accessible interior signs as shown in the drawings, interior wall surface mounted adjacent to latch side of room doors, bottom edge of top line of letters to be 60" above finish floor, max.

END

10 14 00-2

DIVISION 10 - SPECIALTIES  
**Section 10 28 13 - Toilet Accessories**

1. GENERAL

1.01 SECTION INCLUDES

- A. Base Bid, General Contractor provide:
  - 1. Toilet accessories and attachment hardware.

1.02 RELATED SECTIONS

- A. Section 06 10 00 - Rough Carpentry.

1.03 REFERENCES

- A. ANSI/ASTM A123 - Zinc (Hot-Dip Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars and Strips.
- B. ANSI/ASTM A366 - Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.
- C. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
- D. ASTM A269 - Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

1.04 SUBMITTALS

- A. Provide product data on accessories describing size, finish, details of function, attachment methods.

1.05 SEQUENCING AND SCHEDULING

- A. Coordinate the work of this Section with the placement of internal wall reinforcement to receive anchor attachments.

1.06 WARRANTY

- A. Provide five (1) year manufacturer's warranty.

2. PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Refer to Schedule at the end of this Section.

2.02 PRODUCTS

- A. Refer to Schedule at the end of this Section.

2.03 MATERIALS

## SECTION 10 28 13-2

- A. Sheet Steel: ANSI/ASTM A366.
- B. Stainless Steel Sheet: ASTM A167, Type 304.
- C. Tubing: ASTM A269, stainless steel.
- D. Fasteners, Screws, and Bolts: Hot dip galvanized, tamperproof.
- E. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

### 2.04 FABRICATION

- A. Weld and grind smooth joints of fabricated components.
- B. Form exposed surfaces from single sheet of stock, free of joints.
- C. Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.
- D. Back paint components where contact is made with building finishes to prevent electrolysis.
- E. Shop assemble components and package complete with anchors and fittings.
- F. Provide steel anchor plates, adapters, and anchor components for installation.
- G. Hot dip galvanize exposed and painted ferrous metal and fastening devices.

### 2.05 FACTORY FINISHING

- A. Chrome/Nickel Plating: ANSI/ASTM B456, Type SC 2, satin finish.
- B. Stainless Steel: No. 4 satin luster finish.

## 3. EXECUTION

### 3.01 EXAMINATION

- A. Verify that site conditions are ready to receive work and dimensions are as indicated on shop drawings.
- B. Beginning of installation means acceptance of existing conditions.

### 3.02 PREPARATION

- A. Deliver inserts and rough-in frames to site at appropriate time for installation.
- B. Provide templates and rough-in measurements as required.
- C. Verify exact location of accessories for installation.

### 3.03 INSTALLATION

## SECTION 10 28 13-3

- A. Install fixtures, accessories and items in accordance with manufacturer's instructions.
- B. Install plumb and level, securely and rigidly anchored to substrate.

### 3.04 SCHEDULE

#### A. Toilet paper dispensers:

- 1. Surface mounted; double roll; stainless steel; one unit at each water closet; locking device, mounted at 19" above finish floor; centered at 7"-9" from front of water closet bowl.
- 2. Acceptable Manufacturers:
  - a. American Specialties, Inc: 9030, design base.
  - b. Bradley.
  - c. Tork.

#### B. Mirrors:

- 1. Size: 24" wide x 36" tall; 1/4 inch plate glass electro-copper plated; five-year guarantee against silver spoilage; shock absorbing and filler strip protection; frame: stainless steel, satin finish; concealed mounting with hanger; centered above lavatory; bottom edge of reflective surface mounted at 40" above finish floor (max.).
- 2. Acceptable Manufacturers:
  - a. American Specialties, Inc: 0620, design base.
  - b. Bradley.
  - c. Tork.

#### C. Soap Dispensers:

- 1. Surface mounted horizontal liquid soap dispenser, 20 ga. stainless steel type 304 with satin finish, push button valve, ADA compliant.
- 2. Acceptable Manufacturers:
  - a. American Specialties, Inc: 0345, design base.
  - b. Bradley.
  - c. Tork.

#### D. Stainless Steel Grab Bars:

- 1. 1 1/2" o.d.; 18 gauge, type 304 stainless steel; concealed mounting; satin finish; 36" grab bar at wall where fixture is mounted, 6" from adjacent wall or partition; 42" grab bar at wall or partition adjacent to fixture, 12" from wall where fixture is mounted; all bars mounted with centerline at 34" above finish floor; 18" vertical grab bar with bottom of bar mounted at 40" above finish floor and 40" from adjacent wall or partition.
- 2. Acceptable Manufacturers:

## SECTION 10 28 13-4

- a. American Specialties, Inc: 3800 Series.
- b. Bradley: Series 812.

### E. Towel dispensers:

- 1. Surface mounted paper towel dispenser for multi-fold or C fold towels, 22 ga. 304 stainless steel, satin finish, key lock door, ADA compliant..
- 2. Acceptable Manufacturers:
  - a. American Specialties, Inc: 0210, design base.
  - b. Bradley.
  - c. Tork.

### F. Baby changing stations:

- 1. Surface mounted horizontal baby changing station, support 300 lbs., non-porous plastic construction, damper gas spring, heavy duty bag hook, bed liner dispenser, child protection safety strap, ADA compliant.
- 2. Acceptable Manufacturers:
  - a. American Specialties, Inc: 9014, design base.
  - b. Bradley.
  - c. Tork.



DIVISION 10 - SPECIALTIES  
**Section 10 44 16 - Fire Extinguishers**

**1. GENERAL**

**1.01 SECTION INCLUDES**

- A. Base Bid, General Contractor provide:
  - 1. Portable fire extinguishers.
  - 2. Fire protection cabinets for the portable fire extinguishers.

**1.02 RELATED SECTIONS**

- A. Section 06 10 00 - Rough Carpentry.
- B. Section 09 21 16 - Gypsum Board System.

**1.03 REGULATORY REQUIREMENTS**

- A. State of Illinois Fire Marshall's Office.
- B. National Fire Protection Association.

**1.04 SUBMITTALS**

- A. Provide shop drawings and product data on extinguishers and cabinets describing size, finish, installation and accessories.

**1.05 SEQUENCING AND SCHEDULING**

- A. Coordinate the work of this Section with the placement of internal wall framing and/or blocking to receive semi-recessed units.

**2. PRODUCTS**

**2.01 ACCEPTABLE MANUFACTURERS**

- A. Larsen's Manufacturing Company - Minneapolis, MN.
- B. Substitutions in accordance with Section 01 26 00.

**2.02 PORTABLE FIRE EXTINGUISHERS**

- A. Multipurpose dry chemical type: UL rated 4A, 60 B,C, 10 lb. nominal capacity, in red enameled steel container.

**2.03 CABINETS**

- A. Fire-rated cabinets, UL listed with UL listing mark with fire-resistance rating of wall at installed location.

## SECTION 10 44 16-2

- B. Semi-recessed, cabinet box partially recessed in wall of shallow depth. Class 1, clear door, with full tempered float glass. Clear anodized aluminum door construction.

### 3. EXECUTION

#### 3.01 INSTALLATION

- A. Install cabinets, extinguishers and accessories where indicated on Drawings.

#### 3.02 CLEAN UP

- A. Upon completion of the work, thoroughly clean units.
- B. Touch-up any surfaces damaged as a result of installation.

END

10 44 16-2

DIVISION 10 - SPECIALTIES  
**Section 10 75 00 - Flagpole**

**1. GENERAL**

**1.01 SECTION INCLUDES**

A. Base Bid, General Contractor provide:

1. Aluminum flagpole.
2. Mounting base.
3. Halyards, accessories.

**1.02 RELATED WORK**

A. Section 03 30 00 - Cast-in-place Concrete.

**1.03 SYSTEM DESCRIPTION**

- A. Type: Ground; fixed type.
- B. Pole Design: Cone tapered.
- C. Exposed Heights: 30 ft., overall height 35 ft and 25 ft, overall height of 30 ft.
- D. Halyard: Internal type.

**1.04 PERFORMANCE**

- A. Pole with Flags Flying: Resistant without permanent deformation, 95 miles/hr wind velocity, non-resonant, safety design factor of 2.5.

**1.05 SUBMITTALS**

- A. Submit shop drawings and product data under provisions of Section 01 33 23.
- B. Indicate on shop drawings, detailed dimensions, base details, anchor requirements, and imposed loads.
- C. Provide product data on pole, accessories, finishes and configurations.
- D. Warranty: Submit warranty under provisions of Section 01 78 36.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver, store and protect products under provisions of Section 01 66 00.
- B. Spiral wrap flagpole with protective covering and pack in protective shipping tubes or containers.
- C. Protect flagpole and accessories on site from damage or moisture.

## SECTION 10 75 00-2

### 2. PRODUCTS

#### 2.01 ACCEPTABLE MANUFACTURERS

- A. Baartol Co., Inc.
- B. American Flagpole.
- C. Morgan-Francis AABEC Pole.
- D. Substitutions: Under provisions of Section 01 26 00.

#### 2.02 POLE MATERIALS

- A. Aluminum: ASTM B241; 6063-T6 aluminum alloy.

#### 2.03 COMPONENTS AND ACCESSORIES

- A. Finial Ball: Aluminum; 14 ga., size to match pole tip diameter.
- B. Truck Assembly: Cast aluminum; revolving single pulley; stainless steel ball-bearings, non-fouling.
- C. Flags: By Owner (10'x15').
- D. Cleats: 9 inch size, aluminum with stainless steel fastenings, two per halyard.
- E. Halyard: Two sets of #10, 5/16 inch diameter polypropylene, braided, white.
- F. Brass flag clips: As required for two flags, minimum.
- G. Field Connection: Manufacturer's recommended shop tested, machined sleeve.

#### 2.04 MOUNTING COMPONENTS

- A. Foundation Tube Sleeve: AASHTO M-36, corrugated 16 gauge steel, galvanized, depth as indicated.
- B. Pole Base Attachment: Sleeve; aluminum base with base cover.
- C. Lightning Ground Rod: 12 inch long copper rod, 3/4 inch diameter.

#### 2.05 POLE FABRICATION

- A. Outside Butt Diameter: 8 inches.
- B. Outside Tip Diameter: 3-1/2 inches.
- C. Nominal Thickness: .188 inches, min.

#### 2.06 FINISHES

## SECTION 10 75 00-3

- A. Metal Surfaces in Contact With Concrete: Asphaltic paint.
- B. Concealed Steel Surfaces: Prime painted.
- C. Aluminum: Satin brush finish.
- D. Finial: Gold anodized finish.

### 3. EXECUTION

#### 3.01 INSPECTION

- A. Verify that concrete foundation is ready to receive work and dimensions are as indicated on shop drawings.
- B. Beginning of installation means acceptance of existing conditions.

#### 3.02 PREPARATION

- A. Coat metal sleeve surfaces below grade and surfaces in contact with dissimilar materials with asphaltic paint.

#### 3.03 INSTALLATION

- A. Install flagpole, base assembly, and fittings in accordance with manufacturer's instructions.
- B. Electrically ground flagpole installation.
- C. Install foundation plate and centering wedges for flagpole set in a cast in place concrete base, base size, configuration and design shall be by the manufacturer. Fill foundation tube sleeve with sand and compact.

#### 3.04 TOLERANCES

- A. Maximum Variation From Plumb: One inch.

#### 3.05 ADJUSTING AND CLEANING

- A. Clean surfaces.
- B. Adjust operating devices so that halyard and flags function smoothly.

END

10 75 00-3

DIVISION 12 - FURNISHINGS  
**Section 12 36 61 - Solid Surfacing Window Sills**

**1. GENERAL**

**1.01 SECTION INCLUDES**

**A. Base Bid, General Contractor provide:**

1. Solid surface countertops and accessories for a complete window sill system.

**1.02 RELATED SECTIONS**

**A. Section 08 51 13- Aluminum Windows**

**1.03 DEFINITION**

- A. Solid surface is defined as nonporous, homogeneous material maintaining the same composition throughout. The solid surface material is a composition of acrylic polymer, aluminum trihydrate filler and pigment.**

**1.04 SUBMITTALS**

**A. Product data:**

1. Submit data for solid surface product indicated.
2. Indicate product description, fabrication information and compliance with specified performance requirements.

**B. Shop drawings:**

1. Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices and other components.
  - a. Show full-size details, edge details, thermoforming requirements, attachments, etc.
  - b. Show locations and sizes of furring, blocking, including concealed blocking and reinforcement.
  - c. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, waste receptacle, grommets and other items installed in solid surface.

**C. Samples:**

1. For each type of product indicated.
  - a. Submit minimum 6-inch by 6-inch sample in specified gloss.
  - b. Cut sample and seam together for representation of inconspicuous seam.
  - c. Indicate full range of color and pattern variation.
2. Approved samples will be retained as a standard for work.

**1.05 QUALITY ASSURANCE**

**A. Qualifications:**

## SECTION 12 36 61-2

1. Shop that custom fabricates products similar to those required for this project and whose products have a record of successful in-service performance. Three years experience, minimum.

### 1.06 REFERENCES

- A. American National Standards Institute (ANSI)
- B. American Society for Testing and Materials (ASTM)
- C. National Electrical Manufacturers Association (NEMA)
- D. NSF International

1. Fire test response characteristics:

- a. Provide with the following Class A (Class I) surface burning characteristics as determined by testing identical products per UL 723 (ASTM E84) or another testing and inspecting agency acceptable to authorities having jurisdiction:
  - 1) Flame Spread Index: 25 or less.
  - 2) Smoke Developed Index: 450 or less.

### 1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver no components to project site until areas are ready for installation.
- B. Store components indoors prior to installation.
- C. Handle materials to prevent damage to finished surfaces.
  1. Provide protective coverings to prevent physical damage or staining following installation for duration of project.

### 1.08 WARRANTY

- A. Provide manufacturer's 10-year warranty against defects in materials.
  1. Warranty shall provide material and labor to repair or replace defective materials.
  2. Damage caused by physical or chemical abuse or damage from excessive heat will not be warranted.

### 1.09 MAINTENANCE

- A. Provide maintenance requirements as specified by the manufacturer.

## 2. PRODUCTS

### 2.01 MANUFACTURERS

- A. Corian

## SECTION 12 36 61-3

- B. Wilsonart Acrylic Solid Surface
- C. Formica
- D. Substitutions in accordance with Section 01 26 00.

### 2.02 MATERIALS

- A. Solid polymer components
  - 1. Cast, nonporous, filled polymer, not coated, laminated or of composite construction with through body colors meeting ANSI Z124.3 or ANSI Z124.6, having minimum physical and performance properties specified.
  - 2. Superficial damage to a depth of 0.010 inch shall be repairable by sanding and/or polishing.
- B. Thickness:
  - 1. 1/2 inch
- C. Edge treatment:
  - 1. Radius
- D. Color by Owner from standard selection.
- E. Backsplash:
  - 1. Coved.
- F. Sidesplash:
  - 1. Coved.

### 2.03 PERFORMANCE CHARACTERISTICS:

Property	Typical Result	Test
Tensile Strength	6,000 psi	ASTM D 638
Tensile Modulus	$1.5 \times 10^{-6}$ psi	ASTM D 638
Tensile Elongation	0.4% min.	ASTM D 638
Flexural Strength	10,000 psi	ASTM D 790
Flexural Modulus	$1.2 \times 10^{-6}$ psi	ASTM D 790
Hardness	>85	Rockwell "M" Scale
	56	ASTM D 785
		Barcol Impressor
		ASTM D 2583
		ASTM D 696
Thermal Expansion	$3.02 \times 10^{-5}$ in./in./°C ( $1.80 \times 10^{-5}$ in./in./°F)	
Gloss (60° Gardner)	5-75 (matte-highly polished)	ANSI Z124
Light Resistance	(Xenon Arc) No effect	NEMA LD 3-2000 Method 3.3



## SECTION 12 36 61-4

Wear and Cleanability	Passes	ANSI Z124.3 & Z124.6
Stain Resistance: Sheets	Passes	ANSI Z124.3 & Z124.6
Fungus and Bacteria Resistance	Does not support microbial growth	ASTM G21 & G22
Boiling Water Resistance	No visible change	NEMA LD 3-2000 Method 3.5
High Temperature Resistance	No change	NEMA LD 3-2000 Method 3.6
Izod Impact (Notched Specimen)	0.28 ft.-lbs./in. of notch	ASTM D 256 (Method A)
Ball Impact Resistance: Sheets	No fracture - ½ lb. ball: 1/4" slab - 36" drop ½" slab - 144" drop	NEMA LD 3-2000 Method 3.8
Weatherability	$\Delta E^*_{94} < 5$ in 1,000 hrs.	ASTM G 155
Specific Gravity †	1.7	
Water Absorption	Long-term 0.4% (3/4") 0.6% (½") 0.8% (1/4")	ASTM D 570
Toxicity	99 (solid colors) 66 (patterned colors)	Pittsburgh Protocol Test ("LC50" Test)
Flammability	All colors (Class I and Class A)	ASTM E 84, NFPA 255 & UL 723
Flame Spread Index	<25	
Smoke Developed Index	<25	

### 2.04 ACCESSORIES

#### A. Joint Adhesive:

1. Manufacturer's standard one- or two-part adhesive kit to create inconspicuous, nonporous joints.

#### B. Sealant:

1. Manufacturer's standard mildew-resistant, FDA-compliant, NSF 51-compliant (food zone - any type), UL-listed silicone sealant in colors matching components.

### 2.05 FACTORY FABRICATION

#### A. Shop assembly:

1. Fabricate components to greatest extent practical to sizes and shapes indicated, in accordance with approved shop drawings and manufacturer's printed instruction and technical bulletins.
2. Form joints between components using manufacturer's standard joint adhesive without conspicuous joints. Reinforce with strip of solid polymer material, 2" wide.
3. Provide factory cutouts for plumbing fittings and bath accessories as indicated on the drawings.

## SECTION 12 36 61-5

4. Rout and finish component edges with clean, sharp returns.
  - a. Rout cutouts, radii and contours to template.
  - b. Smooth edges.
  - c. Repair or reject defective and inaccurate work.

### 2.06 FINISHES

- A. Provide surfaces with a uniform finish.

1. Matte: gloss range of 5-20.

## 3. EXECUTION

### 3.01 EXAMINATION

- A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.02 INSTALLATION

- A. Install components plumb, level and rigid, scribed to adjacent finishes, in accordance with approved shop drawings and product data.
  1. Provide product in the largest pieces available.
  2. Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work. Exposed joints/seams shall not be allowed.
  3. Reinforce field joints with solid surface strips extending a minimum of 1 inch on either side of the seam with the strip being the same thickness as the top.
  4. Cut and finish component edges with clean, sharp returns.
  5. Rout radii and contours to template.
  6. Anchor securely to base cabinets or other supports.
  7. Align adjacent countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop.
  8. Carefully dress joints smooth, remove surface scratches and clean entire surface.
  9. Install countertops with no more than 1/8" sag, bow or other variation from a straight line.
- B. Coved backsplashes and sidesplashes:
  1. Provide coved backsplashes and sidesplashes at all walls and adjacent millwork.

## SECTION 12 36 61-6

2. Fabricate radius cove at intersection of counters with backsplashes to dimensions shown on the drawings.
3. Adhere to countertops using manufacturer's standard color-matched joint adhesive.

### 3.03 REPAIR

- A. Repair or replace damaged work which cannot be repaired to architect's satisfaction.

### 3.04 CLEANING AND PROTECTION

- A. Keep components clean during installation.
- B. Remove adhesives, sealants and other stains.

END

12 36 61-6

## SECTION 22 05 53

### IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Pipe markers.
  - 2. Labels.

##### 1.2 REFERENCES

- A. American Society of Mechanical Engineers:
  - 1. ASME A13.1 - Scheme for the Identification of Piping Systems.

##### 1.3 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of tagged valves; include valve tag numbers.

##### 1.4 QUALITY ASSURANCE

- A. Conform to ASME A13.1 for color scheme for identification of piping systems and accessories.

##### 1.5 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

#### PART 2 PRODUCTS

##### 2.1 PIPE MARKERS

- A. Color and Lettering: Conform to ASME A13.1.
- B. Plastic Tape Pipe Markers:
  - 1. Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.
- C. Plastic Underground Pipe Markers:
  - 1. Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

##### 2.2 LABELS

- A. Description: Aluminum, size 1.9 x 0.75 inches, adhesive backed with printed identification.

## PART 3 EXECUTION

### 3.1 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.

### 3.2 INSTALLATION

- A. Install identifying devices after completion of coverings and painting.
- B. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive.
- C. Install underground plastic pipe markers 6 to 8 inches below finished grade, directly above buried pipe.
- D. Identify water heaters, pumps, tanks, and water treatment devices with labels.
- E. Identify control panels and major control components outside panels with plastic nameplates.
- F. Identify valves in main and branch piping with tags.
- G. Identify piping, concealed or exposed, with plastic tape pipe markers. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, and at each obstruction.

END OF SECTION

SECTION 22 07 00  
PLUMBING INSULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Plumbing piping insulation, jackets and accessories.

1.2 REFERENCES

- A. ASTM International:
  - 1. ASTM C534 - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form.
  - 2. ASTM C585 - Standard Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System).
  - 3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

- A. Product Data: Submit product description, thermal characteristics and list of materials and thickness for each service, and location.

1.4 QUALITY ASSURANCE

- A. Test pipe insulation for maximum flame spread index of 25 and maximum smoke developed index of not exceeding 50 in accordance with ASTM E84.
- B. Pipe insulation manufactured in accordance with ASTM C585 for inner and outer diameters.
- C. Factory fabricated fitting covers manufactured in accordance with ASTM C450.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
- B. Protect insulation from weather and construction traffic, dirt, water, chemical, and damage, by storing in original wrapping.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Install insulation only when ambient temperature and humidity conditions are within range recommended by manufacturer.

- B. Maintain temperature before, during, and after installation for minimum period of 24 hours.

## 1.7 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

## PART 2 PRODUCTS

### 2.1 MANUFACTURER

- A. Manufacturers for Closed Cell Elastomeric Insulation Products:
  - 1. Aeroflex. Aerocell.
  - 2. Armacell, LLC. Armaflex.
  - 3. Nomaco. K-flex.

### 2.2 PIPE INSULATION

- A. TYPE P-5: ASTM C534, Type I, flexible, closed cell elastomeric insulation, tubular.
  - 1. Thermal Conductivity: 0.27 at 75 degrees F.
  - 2. Operating Temperature Range: Range: Minus 70 to 180 degrees F.

### 2.3 PIPE INSULATION ACCESSORIES

- A. Piping 1-1/2 inches diameter and smaller: Galvanized steel insulation protection shield. MSS SP-69, Type 40. Length: Based on pipe size and insulation thickness.
- B. Piping 2 inches diameter and larger: Wood insulation saddle, hard maple. Inserts length: not less than 6 inches long, matching thickness and contour of adjoining insulation.
- C. Closed Cell Elastomeric Insulation Pipe Hanger: Polyurethane insert with aluminum single piece construction with self adhesive closure. Thickness to match pipe insulation.
- D. Adhesives: Compatible with insulation.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify piping has been tested before applying insulation materials.
- B. Verify surfaces are clean and dry, with foreign material removed.

### 3.2 INSTALLATION - PIPING SYSTEMS

- A. Piping Exposed to View in Finished Spaces: Locate insulation and cover seams in least visible locations.

- B. Continue insulation through penetrations of building assemblies or portions of assemblies having fire resistance rating of one hour or less. Provide intumescent firestopping when continuing insulation through assembly. Finish at supports, protrusions, and interruptions. Refer to Section 07 84 00 for penetrations of assemblies with fire resistance rating greater than one hour.
- C. Piping Systems Conveying Fluids Below Ambient Temperature:
  - 1. Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, and expansion joints.
  - 2. Furnish factory-applied or field-applied vapor retarder jackets. Secure factory-applied jackets with pressure sensitive adhesive self-sealing longitudinal laps and butt strips. Secure field-applied jackets with outward clinch expanding staples and seal staple penetrations with vapor retarder mastic.
  - 3. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor retarder adhesive or PVC fitting covers.
- D. Hot Piping Systems less than 140 degrees F:
  - 1. Furnish factory-applied or field-applied standard jackets. Secure with outward clinch expanding staples or pressure sensitive adhesive system on standard factory-applied jacket and butt strips or both.
  - 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
  - 3. Do not insulate unions and flanges at equipment, but bevel and seal ends of insulation at such locations.
- E. Inserts and Shields:
  - 1. Piping 1-1/2 inches Diameter and Smaller: Install galvanized steel shield between pipe hanger and insulation.
  - 2. Piping 2 inches Diameter and Larger: Install insert between support shield and piping and under finish jacket.
    - a. Insert Configuration: Minimum 6 inches long, of thickness and contour matching adjoining insulation; may be factory fabricated.
    - b. Insert Material: Compression resistant insulating material suitable for planned temperature range and service.
  - 3. Piping Supported by Roller Type Pipe Hangers: Install galvanized steel shield between roller and inserts.
- F. Insulation Terminating Points:
  - 1. Coil Branch Piping 1 inch and Smaller: Terminate hot water piping at union upstream of the coil control valve.
  - 2. Condensate Piping: Insulate entire piping system and components to prevent condensation.
- G. Closed Cell Elastomeric Insulation:
  - 1. Push insulation on to piping.
  - 2. Miter joints at elbows.
  - 3. Seal seams and butt joints with manufacturer's recommended adhesive.
  - 4. When application requires multiple layers, apply with joints staggered.
  - 5. Insulate fittings and valves with insulation of like material and thickness as adjacent pipe.



### 3.3 SCHEDULES

#### A. Water Supply Services Piping Insulation Schedule:

PIPING SYSTEM	INSULATION TYPE	PIPE SIZE	INSULATION THICKNESS inches
Domestic Hot Water Supply	P-5	1-1/4 inches and smaller	0.5
		1-1/2 inches and larger	1.0
Domestic Cold Water, including above slab piping	P-5	1-1/4 inches and smaller	0.5
		1-1/2 inches and larger	1.0

END OF SECTION

## SECTION 22 11 00

### FACILITY WATER DISTRIBUTION

#### PART 1 GENERAL

##### 1.1 SUMMARY

A. Section Includes:

1. Domestic water piping, above grade.
2. Unions and flanges.
3. Valves.
4. Pipe hangers and supports.
5. Flow control valves.
6. Relief valves.
7. Hydrants.
8. Backflow preventers.
9. Water hammer arrestors.
10. Thermostatic mixing valves.
11. Pressure balanced mixing valves.

B. Related Sections:

1. Section 08 31 13 - Access Doors and Frames: Product requirements for access doors for placement by this section.
2. Section 22 05 53 - Identification for Plumbing Piping and Equipment: Product requirements for pipe identification and valve tags for placement by this section.
3. Section 22 07 00 - Plumbing Insulation: Product and execution requirements for pipe insulation.

##### 1.2 REFERENCES

A. American National Standards Institute:

1. ANSI Z21.22 - Relief Valves for Hot Water Supply Systems.

B. American Society of Mechanical Engineers:

1. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.
2. ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
3. ASME B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes.
4. ASME B31.9 - Building Services Piping.
5. ASME B40.1 - Gauges - Pressure Indicating Dial Type - Elastic Element.
6. ASME Section VIII - Boiler and Pressure Vessel Code - Pressure Vessels.
7. ASME Section IX - Boiler and Pressure Vessel Code - Welding and Brazing Qualifications.

C. American Society of Sanitary Engineering:

1. ASSE 1010 - Performance Requirements for Water Hammer Arresters.
2. ASSE 1011 - Performance Requirements for Hose Connection Vacuum Breakers.
3. ASSE 1012 - Performance Requirements for Backflow Preventer with Intermediate Atmospheric Vent.

4. ASSE 1013 - Performance Requirements for Reduced Pressure Principle Backflow Preventers and Reduced Pressure Fire Protection Principle Backflow Preventers.
5. ASSE 1019 - Performance Requirements for Vacuum Breaker Wall Hydrants, Freeze Resistant, Automatic Draining Type.
6. ASSE 5013 - Performance Requirements for Reduced Pressure Principle Backflow Preventers (RP) and Reduced Pressure Fire Protection Principle Backflow Preventers (RFP).

D. ASTM International:

1. ASTM B32 - Standard Specification for Solder Metal.
2. ASTM B42 - Standard Specification for Seamless Copper Pipe, Standard Sizes.
3. ASTM B88 - Standard Specification for Seamless Copper Water Tube.
4. ASTM B584 - Standard Specification for Copper Alloy Sand Castings for General Applications.
5. ASTM D1785 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedule 40, 80, and 120.
6. ASTM D2464 - Standard Specification for Threaded Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
7. ASTM D2466 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
8. ASTM D2467 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
9. ASTM D2564 - Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems.
10. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
11. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
12. ASTM D 3311 - Standard Specification for Drain, Waste, and Vent (DWV) Plastic Fittings Patterns.
13. ASTM E1 - Standard Specification for ASTM Thermometers.
14. ASTM E77 - Standard Test Method for Inspection and Verification of Thermometers.
15. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.
16. ASTM F876 - Standard Specification for Crosslinked Polyethylene (PEX) Tubing.
17. ASTM F877 - Standard Specification for Crosslinked Polyethylene (PEX) Hot and Cold Water Distribution Systems.
18. ASTM F 891 - Standard Specification for Coextruded Poly(Vinyl Chloride) (PVC) Plastic Pipe With a Cellular Core.
19. ASTM F1476 - Standard Specification for Performance of Gasketed Mechanical Couplings for Use in Piping Applications.

E. American Welding Society:

1. AWS A5.8 - Specification for Filler Metals for Brazing and Braze Welding.

F. American Water Works Association:

1. AWWA C110 - American National Standard for Ductile-Iron and Grey-Iron Fittings, 3 in. through 48 in. (75 mm through 1200 mm), for Water and Other Liquids.
2. AWWA C111 - American National Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
3. AWWA C651 - Disinfecting Water Mains.

4. AWWA C700 - Cold-Water Meters - Displacement Type, Bronze Main Case.
5. AWWA C701 - Cold-Water Meters - Turbine Type, for Customer Service.
6. AWWA C702 - Cold-Water Meters - Compound Type.
7. AWWA C706 - Direct-Reading, Remote-Registration Systems for Cold-Water Meters.
8. AWWA M6 - Water Meters - Selection, Installation, Testing, and Maintenance.

G. Manufacturers Standardization Society of the Valve and Fittings Industry:

1. MSS SP 67 - Butterfly Valves.
2. MSS SP 69 - Pipe Hangers and Supports - Selection and Application.
3. MSS SP 110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.

H. Plumbing and Drainage Institute:

1. PDI WH201 - Water Hammer Arrester Standard.

### 1.3 SUBMITTALS

A. Product Data:

1. Piping: Submit data on pipe materials, fittings, and accessories. Submit manufacturer's catalog information.

### 1.4 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of valves and equipment.

B. Operation and Maintenance Data: Submit spare parts list, exploded assembly views and recommended maintenance intervals.

### 1.5 QUALITY ASSURANCE

A. For drinking water service, provide valves complying with NSF 61.

B. Perform Work in accordance with State of Illinois Plumbing Code.

### 1.6 DELIVERY, STORAGE, AND HANDLING

A. Accept valves and equipment on site in shipping containers with labeling in place. Inspect for damage.

B. Provide temporary protective coating on cast iron and steel valves.

C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.

## 1.7 ENVIRONMENTAL REQUIREMENTS

- A. Do not install underground piping when bedding is wet or frozen.

## 1.8 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

## PART 2 PRODUCTS

### 2.1 DOMESTIC WATER PIPING, ABOVE GRADE

- A. Copper Tubing: ASTM B88, Type L drawn.
  - 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
  - 2. Joints: ASTM B32, Alloy Grade Sb5 tin-antimony, or Alloy Grade Sn95 tin-silver, lead free solder.
- B. PEX Tubing: ASTM F876, Crosslinked Polyethylene .
  - 1. Fittings: ASTM F876, copper crimp.
  - 2. Joints: ASTM F876, copper crimp.

### 2.2 UNIONS AND FLANGES

- A. Unions for Pipe 2 inches and Smaller:
  - 1. Copper Piping: Class 150, bronze unions with soldered/brazed joints.
  - 2. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.
  - 3. PVC Piping: PVC.
- B. Flanges for Pipe 2-1/2 inches and Larger:
  - 1. Copper Piping: Class 150, slip-on bronze flanges.
  - 2. PVC Piping: PVC flanges.
  - 3. Gaskets: 1/16 inch thick preformed neoprene gaskets.
- C. PVC Pipe Materials: For connections to equipment and valves with threaded connections, furnish solvent-weld socket to screwed joint adapters and unions, or ASTM D2464, Schedule 80, threaded, PVC pipe.

### 2.3 BALL VALVES

- A. 2 inches and Smaller: MSS SP 110, Class 150, bronze, two piece body, chrome plated bronze ball, full port, teflon seats, blow-out proof stem, solder or threaded ends, lever handle.

### 2.4 BUTTERFLY VALVES

- A. 2-1/2 inches and Larger: MSS SP 67, Class 150.
  - 1. Body: Cast or ductile iron, wafer, lug or grooved ends, stainless steel stem, extended neck.
  - 2. Disc: Nickel-plated ductile iron.

3. Seat: Resilient replaceable EPDM.
4. Handle and Operator: 10 position lever handle.

## 2.5 CHECK VALVES

- A. Horizontal Swing Check Valves:
  1. 2 inches and Smaller: MSS SP 80, Class 150, bronze body and cap, bronze seat, Buna-N disc, solder or threaded ends.
  2. 2-1/2 inches and Larger: MSS SP 71, Class 125, cast iron body, bolted cap, bronze or cast iron disc, flanged ends.
- B. Spring Loaded Check Valves:
  1. 2 inches and Smaller: MSS SP 80, Class 250, bronze body, in-line spring lift check, silent closing, Buna-N disc, integral seat, solder or threaded ends.
  2. 2-1/2 inches and Larger: MSS SP 71, Class 125, wafer or globe style, cast iron body, bronze seat, center guided bronze disc, stainless steel spring and screws, flanged ends.

## 2.6 RELIEF VALVES

- A. Temperature and Pressure Relief:
  1. ANSI Z21.22 certified, bronze body, teflon seat, stainless steel stem and springs, automatic, direct pressure actuated, temperature relief maximum 210 degrees F, capacity ASME certified and labeled.

## 2.7 HYDRANTS

- A. Wall Hydrant: ASSE 1019; non-freeze, self-draining, box type with chrome plated wall plate hose thread spout, locks shield and removable key, and integral vacuum breaker.

## 2.8 BACKFLOW PREVENTERS

- A. Reduced Pressure Backflow Preventers:
  1. Comply with ASSE 1013.
  2. Bronze body, with bronze internal parts and stainless steel springs.
  3. Two independently operating, spring loaded check valves; diaphragm type differential pressure relief valve located between check valves; third check valve opening under back pressure in case of diaphragm failure; non-threaded vent outlet; assembled with two gate valves, strainer, and four test cocks.

## 2.9 WATER HAMMER ARRESTORS

- A. ASSE 1010; copper construction, bellows type sized in accordance with PDI WH-201.
- B. Pre-charged suitable for operation in temperature range 34 to 250 degrees F and maximum 150 psi working pressure.

## 2.10 THERMOSTATIC MIXING VALVES

- A. Valve: Chrome plated cast brass body, integral temperature adjustment. Conform to ASSE 1017,1070 to temper water to maximum 105 degrees F.

## 2.11 PRESSURE BALANCED MIXING VALVES

- A. Valve: Chrome plated cast brass body, stainless steel cylinder and integral temperature adjustment.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify excavations are to required grade, dry, and not over-excavated.

### 3.2 PREPARATION

- A. Ream pipe and tube ends. Remove burrs.
- B. Remove scale and dirt, on inside and outside, before assembly.

### 3.3 INSTALLATION - HANGERS AND SUPPORTS

- A. Install hangers and supports in accordance with Section 22 05 29.

### 3.4 INSTALLATION - ABOVE GROUND PIPING

- A. Install non-conducting dielectric connections wherever jointing dissimilar metals.
- B. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- C. Install piping to maintain headroom without interfering with use of space or taking more space than necessary.
- D. Group piping whenever practical at common elevations.
- E. Slope piping and arrange systems to drain at low points.
- F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- G. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings. Refer to Section 22 07 00.
- H. Provide access where valves and fittings are not accessible.
- I. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

- J. Provide support for utility meters in accordance with requirements of utility companies.
- K. Prepare exposed, unfinished pipe, fittings, supports, and accessories ready for finish painting.
- L. Install domestic water piping in accordance with ASME B31.9.
- M. Sleeve pipes passing through partitions, walls and floors. Refer to Section 22 05 29.
- N. Install firestopping at fire rated construction perimeters and openings containing penetrating sleeves and piping.
- O. Install unions downstream of valves and at equipment or apparatus connections.
- P. Install valves with stems upright or horizontal, not inverted.
- Q. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.
- R. Install ball or butterfly valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- S. Install ball or butterfly valves for throttling, bypass, or manual flow control services.
- T. Install potable water protection devices on plumbing lines where contamination of domestic water may occur; on boiler feed water lines, janitor rooms, fire sprinkler systems, premise isolation, irrigation systems, flush valves, interior and exterior hose bibs.
- U. Pipe relief from valves, back-flow preventers and drains to nearest floor drain.
- V. Install water hammer arrestors complete with accessible isolation valve on hot and cold water supply piping to lavatories/sinks/washing machine outlets.
- W. Install air chambers on hot and cold water supply piping to each fixture or group of fixtures (each washroom). Fabricate same size as supply pipe or 3/4 inch minimum, and minimum 18 inches long.

### 3.5 FIELD QUALITY CONTROL

- A. Test domestic water piping system in accordance with Illinois Plumbing Code.

### 3.6 CLEANING

- A. Prior to starting work, verify system is complete, flushed and clean.
- B. Verify pH of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
- C. Inject disinfectant, free chlorine in liquid, powder and tablet or gas form, throughout system to obtain residual from 50 to 80 mg/L.



- D. Bleed water from outlets to obtain distribution and test for disinfectant residual at minimum 15 percent of outlets.
- E. Maintain disinfectant in system for 24 hours.
- F. When final disinfectant residual tests less than 25 mg/L, repeat treatment.
- G. Flush disinfectant from system until residual concentration is equal to incoming water or 1.0 mg/L.
- H. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

END OF SECTION

## SECTION 22 13 00

### FACILITY SANITARY SEWERAGE

#### PART 1 GENERAL

##### 1.1 SUMMARY

A. Section Includes:

1. Sanitary sewer piping buried within 5 feet of building.
2. Sanitary sewer piping above grade.
3. Unions and flanges.
4. Floor drains.
5. Cleanouts.

B. Related Sections:

1. Section 22 05 29 - Hangers and Supports for Plumbing Piping and Equipment: Product requirements for pipe hangers and supports for placement by this section.
2. Section 22 05 53 - Identification for Plumbing Piping and Equipment: Product requirements for pipe identification for placement by this section.
3. Section 22 07 00 - Plumbing Insulation: Product and execution requirements for pipe insulation.

##### 1.2 REFERENCES

A. American Society of Mechanical Engineers:

1. ASME A112.21.1 - Floor Drains.
2. ASME B31.9 - Building Services Piping.

B. ASTM International:

1. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.
2. ASTM A536 - Standard Specification for Ductile Iron Castings.
3. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
4. ASTM D1785 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
5. ASTM D2464 - Standard Specification for Threaded Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
6. ASTM D2466 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
7. ASTM D2467 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
8. ASTM D2564 - Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems.
9. ASTM D2665 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings.
10. ASTM D2729 - Standard Specification for Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

11. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
  12. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
  13. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.
  14. ASTM F1476 - Standard Specification for Performance of Gasketed Mechanical Couplings for Use in Piping Applications.
- C. Manufacturers Standardization Society of the Valve and Fittings Industry:
1. MSS SP 69 - Pipe Hangers and Supports - Selection and Application.
- D. Product Data:
1. Piping: Submit data on pipe materials, fittings, and accessories. Submit manufacturers catalog information.
- 1.3 CLOSEOUT SUBMITTALS
- A. Project Record Documents: Record actual locations of piping and clean-outs.
- 1.4 QUALITY ASSURANCE
- A. Perform Work in accordance with State of Illinois Plumbing Code.
- 1.5 DELIVERY, STORAGE, AND HANDLING
- A. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.
- 1.6 ENVIRONMENTAL REQUIREMENTS
- A. Do not install underground piping when bedding is wet or frozen.
- 1.7 FIELD MEASUREMENTS
- A. Verify field measurements prior to fabrication.

## PART 2 PRODUCTS

### 2.1 SANITARY SEWER PIPING, BURIED AND/OR WITHIN 5 FEET OF BUILDING

- A. Cast Iron Soil Pipe: ASTM A74, service weight, bell and spigot ends.
1. Fittings: Cast iron, ASTM A74.
  2. Joints: Hub-and-spigot, CISPI HSN compression type with ASTM C564 neoprene gaskets or lead and oakum.
- B. PVC Pipe: ASTM D1785, Schedule 40, polyvinyl chloride (PVC) material, bell and spigot style solvent sealed joint ends.
1. Fittings: ASTM D2466, Schedule 40, PVC.

2. Joints: ASTM D2855, solvent weld with ASTM D2564 Solvent cement.

## 2.2 SANITARY SEWER PIPING, ABOVE GRADE

- A. Cast Iron Pipe: ASTM A74, service weight.
  1. Fittings: Cast iron, ASTM A74.
  2. Joints: ASTM C564, rubber gasket joint devices or lead and oakum.
- B. PVC Pipe: ASTM D1785 Schedule 40 or ASTM D2241 SDR-26 for not less than 150 psi pressure rating, polyvinyl chloride (PVC) material.
  1. Fittings: ASTM D2466, Schedule 40, PVC.
  2. Joints: ASTM D2855, solvent weld with ASTM D2564 Solvent cement.

## 2.3 UNIONS AND FLANGES

- A. Unions for Pipe 2 inches and Smaller:
  1. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.
  2. PVC Piping: PVC.
- B. Flanges for Pipe 2-1/2 inches and Larger:
  1. PVC Piping: PVC flanges.
  2. Gaskets: 1/16 inch thick preformed neoprene gaskets.
- C. PVC Pipe Materials: For connections to equipment and valves with threaded connections, furnish solvent-weld socket to screwed joint adapters and unions, or ASTM D2464, Schedule 80, threaded, PVC pipe.

## 2.4 PIPE HANGERS AND SUPPORTS

- A. Drain, Waste, and Vent: Conform to ASME B31.9 and MSS SP 69.
- B. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Carbon steel, adjustable swivel, split ring.
- C. Hangers for Pipe Sizes 2 inches and Larger: Carbon steel, adjustable, clevis.
- D. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
- E. Wall Support for Pipe Sizes 3 inches and Smaller: Cast iron hooks.
- F. Wall Support for Pipe Sizes 3 inches and Larger: Welded steel bracket and wrought steel clamp.
- G. Vertical Support: Steel riser clamp.
- H. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
- I. Copper Pipe Support: Carbon-steel, copper-plated adjustable ring.

## 2.5 FLOOR DRAINS

- A. Floor Drain (FD-1): ASME A112.21.1; PVC, two-piece body with double drainage flange, weep holes, reversible clamping collar, and round, adjustable nickel-bronze strainer.
- B. Floor Drain (FD-2): ASME A112.21.1; PVC, two-piece body with double drainage flange, weep holes, reversible clamping collar, and round, adjustable nickel-bronze strainer and debris bucket.

## 2.6 CLEANOUTS

- A. Exterior Surfaced Areas (COTG): Round cast nickel bronze access frame and non-skid cover.
- B. Exterior Unsurfaced Areas (COTG): Line type with lacquered cast iron body and round epoxy coated cover with gasket.
- C. Interior Finished Floor Areas (COTF): Lacquered cast iron body with anchor flange, reversible clamping collar, threaded top assembly, and round scored cover with gasket in service areas and round depressed cover with gasket to accept floor finish in finished floor areas.
- D. Interior Finished Wall Areas (COTW): Line type with lacquered cast iron body and round epoxy coated cover with gasket, and round stainless steel access cover secured with machine screw.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify excavations are to required grade, dry, and not over-excavated.

### 3.2 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.
- D. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.

### 3.3 INSTALLATION - HANGERS AND SUPPORTS

- A. Inserts:
  - 1. Provide inserts for placement in concrete forms.
  - 2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
  - 3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe 4 inches and larger.
  - 4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.

5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut above slab.

B. Pipe Hangers and Supports:

1. Install in accordance with ASME B31.9 and MSS SP 69.
2. Support horizontal piping as scheduled.
3. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
4. Place hangers within 12 inches of each horizontal elbow.
5. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
6. Support vertical piping at every floor. Support riser piping independently of connected horizontal piping.
7. Where installing several pipes in parallel and at same elevation, provide multiple pipe hangers or trapeze hangers.
8. Provide copper plated hangers and supports for copper piping.

### 3.4 INSTALLATION - BURIED PIPING SYSTEMS

- A. Verify connection size, location, and invert are as indicated on Drawings.
- B. Establish minimum separation from water services piping in accordance with Illinois Plumbing code.
- C. Remove scale and dirt on inside of piping before assembly.
- D. Install pipe on prepared bedding.
- E. Route pipe in straight line.

### 3.5 INSTALLATION - ABOVE GROUND PIPING

- A. Establish invert elevations, slopes for drainage to 1/4 inch per foot minimum. Maintain gradients.
- B. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Provide clearances at cleanout for snaking drainage system.
- C. Encase exterior cleanouts in concrete flush with grade.
- D. Install floor cleanouts at elevation to accommodate finished floor.
- E. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- F. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- G. Install piping to maintain headroom. Do not spread piping, conserve space.
- H. Group piping whenever practical at common elevations.

- I. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- J. Provide clearance in hangers and from structure and other equipment for installation of insulation. Refer to Section 22 07 00.
- K. Provide access where valves and fittings are not accessible.
- L. Install piping penetrating roofed areas to maintain integrity of roof assembly.
- M. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.
- N. Prepare exposed, unfinished pipe, fittings, supports, and accessories ready for finish painting.
- O. Install bell and spigot pipe with bell end upstream.
- P. Sleeve pipes passing through partitions, walls and floors.
- Q. Support cast iron drainage piping at every joint.

### 3.6 FIELD QUALITY CONTROL

- A. Test sanitary waste and vent piping system in accordance with local authority having jurisdiction.

### 3.7 SCHEDULES

PIPE HANGER SPACING		
PIPE MATERIAL	MAXIMUM HANGER SPACING Feet	HANGER ROD DIAMETER Inches
Cast Iron (All Sizes)	5	5/8
Cast Iron (All Sizes) with 10 foot length of pipe	10	5/8
PVC (All Sizes)	4	3/8

Note for Cast Iron Pipe: Provide close to joint on barrel. Also provide hanger at each change of direction and each branch connection.

END OF SECTION

SECTION 22 40 00  
PLUMBING FIXTURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Water closets.
  - 2. Urinals.
  - 3. Lavatories.
  - 4. Electric water coolers.
- B. Related Sections:
  - 1. Section 07 92 00 - Joint Sealants: Product requirements for calking between fixtures and building components for placement by this section.
  - 2. Section 22 11 00 - Facility Water Distribution: Supply connections to plumbing fixtures.
  - 3. Section 22 13 00 - Facility Sanitary Sewerage: Waste connections to plumbing fixtures.

1.2 REFERENCES

- A. American National Standards Institute:
  - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
  - 2. ANSI Z124.1 - Plastic Bathtub Units.
  - 3. ANSI Z124.2 - Plastic Shower Units.
- B. American Society of Mechanical Engineers:
  - 1. ASME A112.18.1 - Plumbing Fixture Fittings.
  - 2. ASME A112.19.2M - Vitreous China Plumbing Fixtures.
  - 3. ASME A112.19.3 - Stainless Steel Plumbing Fixtures (Designed for Residential Use).
  - 4. ASME A112.19.4 - Porcelain Enameled Formed Steel Plumbing Fixtures.
  - 5. ASME A112.19.5 - Trim for Water-Closet Bowls, Tanks and Urinals.

1.3 SUBMITTALS

- A. Product Data: Submit catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit fixture, trim, exploded view and replacement parts lists.

1.5 QUALITY ASSURANCE

- A. Provide plumbing fixture fittings in accordance with ASME A112.18.1 that prevent backflow from fixture into water distribution system.



## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Accept fixtures on site in factory packaging. Inspect for damage.
- B. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

## PART 2 PRODUCTS

### 2.1 TANK TYPE WATER CLOSETS

- A. Manufacturers:
  - 1. Kohler.
  - 2. American Standard.
  - 3. Zurn.
- B. Bowl: ASME A112.19.2M; floor mounted, siphon jet, vitreous china, 16.5 - 18 inch bowl height, close-coupled closet combination with elongated rim, insulated vitreous china closet tank with fittings and lever flushing valve, bolt caps.
- C. Seat: Solid white plastic, open front, extended back, self-sustaining hinge, brass bolts, without cover.

### 2.2 WALL HUNG URINALS

- A. Manufacturers:
  - 1. Kohler.
  - 2. American Standard Plumbing.
  - 3. Eljer.
  - 4. Zurn.
- B. Urinal: ASME A112.19.2M or ANSI Z124.9, vitreous; vitreous china, wall hung washout urinal with shields, integral trap, removable stainless steel strainer, 3/4 inch top spud, steel supporting hanger.
- C. Exposed Flush Valve: ASME A112.18.1; exposed chrome plated, diaphragm type with oscillating handle, escutcheon, integral screwdriver stop, vacuum breaker; maximum 0.5 gallon flush volume.
- D. Wall Mounted Carrier: ASME A112.6.1; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded fixture studs for fixture hanger, bearing studs.
- E. Provide elastomeric gasket complying with ASME A112.4.3, or approved setting compound, for fixture to flange connection.

### 2.3 LAVATORIES (LAV-1)

- A. Manufacturers:

1. Kohler.
  2. American Standard.
  3. Zurn.
- B. Vitreous China Wall Hung Basin: ASME A112.19.2M; ADA accessible, 20x18, vitreous china wall hung lavatory, with 4 inch high back, drillings on 4 inch centers, rectangular basin with splash lip, overflow.
- C. Faucet: ASME A112.18.1; chrome plated supply fitting with pop-up waste, water economy aerator with maximum 2.0 gpm flow, indexed handles.
- D. Waste Fittings: ASME A112.18.2 or ASTM F 409.
- E. For public hand washing facilities, provide tempered water through regulating device conforming to ASSE 1070.
- F. Accessories:
1. Chrome plated 17 gage brass P-trap and arm with escutcheon.
  2. Wheel handle quarter-turn stops.
  3. Flexible, braided stainless steel supplies.
  4. Trap and waste insulated and offset to meet ADA compliance.
- G. Wall Mounted Carrier: ASME A112.6.1; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, concealed arm supports, bearing plate and studs.

## 2.4 LAVATORIES (LAV-2)

- A. Manufacturers:
1. Kohler.
  2. American Standard.
  3. Zurn.
- B. Vitreous China Undermount Basin: ASME A112.19.2M; ADA accessible, nominal 17x14, vitreous china oval lavatory bowl, with unglazed underside, overflow.
- C. Faucet: ASME A112.18.1; chrome plated supply fitting with pop-up waste, water economy aerator with maximum 2.0 gpm flow, indexed handles.
- D. Waste Fittings: ASME A112.18.2 or ASTM F 409.
- E. For public hand washing facilities, provide tempered water through regulating device conforming to ASSE 1070.
- F. Accessories:
1. Chrome plated 17 gage brass P-trap and arm with escutcheon.
  2. Wheel handle quarter-turn stops.
  3. Flexible, braided stainless steel supplies.
  4. Trap and waste insulated and offset to meet ADA compliance.

## 2.5 ELECTRIC WATER COOLERS (EWC-1)

### A. Manufacturers:

1. Elkay.
2. Oasis.
3. Halsey-Taylor.
4. Substitutions: Section 01 60 00 - Product Requirements.

### B. Fountain:

1. ARI 1010; surface mounted, ADA, hi-lo, electric water cooler with hands-free, laminar flow bottle filler, with stainless steel top, light gray steel body, elevated anti-squirt bubbler with stream guard, automatic stream regulator, push button, mounting bracket, refrigerated with integral air cooled condenser.
2. Capacity: 8gpm of 50 degrees F water with inlet at 80 degrees F and room temperature of 90 degrees F.
3. Electrical: Maximum 370 watts compressor, 6 foot cord and plug for connection to electric wiring system including grounding connector.

## 2.6 LAVATORY INSULATION KIT

- ### A. Product Description:
- Where Lavatories are noted to be insulated for ADA compliance, furnish the following: Safety Covers conforming to ANSI A177.1 and consisting of insulation kit of molded closed cell vinyl construction, 3/16 inch thick, white color, for insulating tailpiece, P-trap, valves, and supply piping. Furnish with weep hole and angle valve access covers.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- #### A. Verify walls and floor finishes are prepared and ready for installation of fixtures.
- #### B. Confirm millwork is constructed with adequate provision for installation of counter top lavatories and sinks.

### 3.2 PREPARATION

- #### A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

### 3.3 INSTALLATION

- #### A. Install Work in accordance with State of Illinois Plumbing Code.
- #### B. Install each fixture with trap, easily removable for servicing and cleaning.
- #### C. Provide chrome plated rigid or flexible supplies to fixtures with screwdriver stops, reducers, and escutcheons.

- D. Install components level and plumb.
- E. Install and secure fixtures in place with wall supports/wall carriers and bolts.
- F. Seal fixtures to wall and floor surfaces with sealant as specified in Section 07 90 00, color to match fixture.
- G. Solidly attach water closets to floor with lag screws. Lead flashing is not intended hold fixture in place.
- H. For ADA accessible water closets, install flush valve with handle to wide side of stall.

#### 3.4 INTERFACE WITH OTHER PRODUCTS

- A. Review millwork shop-drawings. Confirm location and size of fixtures and openings before rough in and installation.

#### 3.5 ADJUSTING

- A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

#### 3.6 CLEANING

- A. Clean plumbing fixtures and equipment.

#### 3.7 PROTECTION OF INSTALLED CONSTRUCTION

- A. Do not permit use of fixtures before final acceptance.

END OF SECTION

## SECTION 23 05 29

### HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

#### PART 1 GENERAL

##### 1.1 WORK INCLUDES

- A. Section Includes:
  - 1. Hanger rods.
  - 2. Flashing.
  - 3. Formed steel channel.

##### 1.2 REFERENCES

- A. American Society of Mechanical Engineers:
  - 1. ASME B31.9 - Building Services Piping.
- B. ASTM International:
  - 1. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.
- C. Manufacturers Standardization Society of the Valve and Fittings Industry:
  - 1. MSS SP 69 - Pipe Hangers and Supports - Selection and Application.

##### 1.3 QUALITY ASSURANCE

- A. Surface Burning Characteristics: Maximum 25/50 flame spread/smoke developed index when tested in accordance with ASTM E84.

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

- A. Accept materials on site in original factory packaging, labeled with manufacturer's identification.
- B. Protect from weather and construction traffic, dirt, water, chemical, and damage, by storing in original packaging.

##### 1.5 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

#### PART 2 PRODUCTS

##### 2.1 ACCESSORIES

- A. Hanger Rods: Mild steel threaded both ends, threaded on one end, or continuous threaded.

## 2.2 FLASHING

- A. Metal Flashing: 26 gage thick galvanized steel.
- B. Metal Counterflashing: 22 gage thick galvanized steel.
- C. Lead Flashing:
  - 1. Waterproofing: 5 lb./sq. ft sheet lead.
  - 2. Soundproofing: 1 lb./sq. ft sheet lead.
- D. Flexible Flashing: 47 mil thick sheet butyl; compatible with roofing.
- E. Caps: Steel, 22 gage minimum; 16 gage at fire resistant elements.

## 2.3 FORMED STEEL CHANNEL

- A. Product Description: Galvanized 12 gage thick steel. With holes 1-1/2 inches on center.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify openings are ready to receive sleeves.

### 3.2 PREPARATION

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter affecting bond of firestopping material.
- B. Remove incompatible materials affecting bond.
- C. Install backing materials to arrest liquid material leakage.
- D. Do not drill or cut structural members.

### 3.3 INSTALLATION - EQUIPMENT BASES AND SUPPORTS

- A. Using templates furnished with equipment, install anchor bolts, and accessories for mounting and anchoring equipment.
- B. Construct supports of formed steel channel. Brace and fasten with flanges bolted to structure.
- C. Provide rigid anchors for pipes after vibration isolation components are installed.

### 3.4 INSTALLATION - FLASHING

- A. Provide flexible flashing and metal Counterflashing where piping and ductwork penetrate weather or waterproofed walls, floors, and roofs.
- B. Adjust storm collars tight to pipe with bolts; caulk around top edge. Use storm collars above roof jacks. Screw vertical flange section to face of curb.

### 3.5 PROTECTION OF FINISHED WORK

- A. Protect adjacent surfaces from damage by material installation.

### 3.6 SCHEDULES

- A. Plastic and Ductile Iron Pipe Hanger Spacing:

PIPE MATERIAL	MAXIMUM HANGER SPACING Feet	HANGER ROD DIAMETER Inches
PVC (All Sizes)	4	3/8

- B. Note 1: Refer to manufacturer's recommendations for grooved end piping systems.
- C. Note 2: 20 feet maximum spacing, minimum of one hanger for each pipe section close to joint behind bell. Provide hanger at each change of direction and each branch connection. For pipe sizes 6 inches and smaller, subjected to loadings other than weight of pipe and contents, limit span to maximum spacing for water service steel pipe.

END OF SECTION

## SECTION 23 05 48

### VIBRATION AND SEISMIC CONTROLS FOR HVAC PIPING AND EQUIPMENT

#### PART 1 GENERAL

##### 1.1 WORK INCLUDES

- A. Section Includes:
  - 1. Vibration isolators.
- B. Related Sections:
  - 1. Section 23 05 29 - Hangers and Supports for HVAC Piping and Equipment: Product requirements for pipe hangers and supports.

##### 1.2 REFERENCES

- A. Air Movement and Control Association International, Inc.:
  - 1. AMCA 300 - Reverberant Room Method for Sound Testing of Fans.
- B. American Society of Heating, Refrigerating and:
  - 1. ASHRAE 68 - Laboratory Method of Testing In-Duct Sound Power Measurement Procedure for Fans.
  - 2. ASHRAE Handbook - HVAC Applications.

##### 1.3 PERFORMANCE REQUIREMENTS

- A. Provide vibration isolation on motor driven equipment over 0.5 hp, plus connected piping and ductwork.
- B. Provide minimum static deflection of isolators for equipment as follows:

	Basement, Under 20 hp	Basement, Over 20 hp	Upper Floors, Normal	Upper Floors, Critical
600 - 800 rpm:	0.5 inch	1 inch	2 inches	3.5 inches
800 - 900 rpm:	0.2 inch	0.5 inch	1 inch	2 inches
1100 - 1500 rpm:	0.14 inch	0.2 inch	0.5 inch	1 inch
Over 1500 rpm:	0.1 inch	0.15 inch	0.2 inch	0.5 inch

- C. Consider upper floor locations critical unless otherwise indicated.



## 1.4 SUBMITTALS

- A. Shop Drawings:
  - 1. Indicate inertia bases and locate vibration isolators, with static and dynamic load on each. Indicate assembly, materials, thickness, dimensional data, pressure losses, acoustical performance, layout, and connection details for sound attenuation products fabricated for this project.
- B. Product Data: Submit schedule of vibration isolator type with location and load on each. Submit catalog information indicating, materials, dimensional data, pressure losses, and acoustical performance for standard sound attenuation products.

## 1.5 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

## PART 2 PRODUCTS

### 2.1 VIBRATION ISOLATORS

- A. Neoprene Pad Isolators:
  - 1. Rubber or neoprene-waffle pads.
    - a. 30 durometer.
    - b. Minimum 1/2 inch thick.
    - c. Maximum loading 40 psi.
    - d. Height of ribs: not to exceed 0.7 times width.
  - 2. Configuration: 1/2 inch thick waffle pads bonded each side of 1/4 inch thick steel plate.
- B. Rooftop Spring Curb (RSC):
  - 1. Curb mounted roof top equipment shall be flexibly ducted, refrigerant lines with flexible metal connectors and electrical lines with flexible conduits. The units shall be supported by a spring isolation curb (RSC), the lower member of which is a sheet metal Z section containing adjustable and removable steel springs that support the upper floating sections. The upper frame must provide continuous support for the equipment and must remain captive when resiliently resisting wind and seismic forces. All directional neoprene snubber bushings must be minimum of 1/4" thick. Steel springs shall be laterally stable and rest on 1/4" thick neoprene acoustical pads. Minimum spring deflection shall be 1-1/2". Hardware must be plated and the springs provided with a rust resistant finish.
  - 2. Units shown directly over a classroom or scheduled for sound/noise reduction option shall include gyp/soundboard inserts properly installed per curb manufacturers instruction to cut noise transmission.
  - 3. The insulated ductwork from roof penetration to suspended curbs shall include a continuous flexible counter flashing, installed and warranted by roofing contractor doing simultaneous work of roofing membrane installation/replacement. Contractor shall coordinate scheduling of work to ensure duct sleeve through roof and curb support base pylons is complete.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify equipment, ductwork and piping is installed before work in this section is started.

### 3.2 EXISTING WORK

- A. Provide access to existing piping and ductwork and other installations remaining active and requiring access.

### 3.3 INSTALLATION

- A. Install isolation for motor driven equipment.
- B. Adjust equipment level.
- C. Install spring hangers without binding.
- D. On closed spring isolators, adjust so side stabilizers are clear under normal operating conditions.
- E. Prior to making piping connections to equipment with operating weights substantially different from installed weights, block up equipment with temporary shims to final height. When full load is applied, adjust isolators to load to allow shim removal.
- F. Support piping connections to isolated equipment resiliently as follows:
  - 1. Up to 4 inch Diameter: First three points of support.
  - 2. Select three hangers closest to vibration source for minimum 1.0 inch static deflection or static deflection of isolated equipment. Select remaining isolators for minimum 1.0 inch static deflection or 1/2 static deflection of isolated equipment.

### 3.4 SCHEDULES

- A. Equipment Isolation Schedule:

Isolated Equipment	Base		Isolator	
	Type	Thickness	Type	Deflection
Packaged Roof Top Air Conditioning Units	VIBRATION ISOLATION CURB (RSC)			

END OF SECTION

## SECTION 23 05 53

### IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

#### PART 1 GENERAL

##### 1.1 WORK INCLUDES

- A. Section Includes:
  - 1. Nameplates.

##### 1.2 REFERENCES

- A. American Society of Mechanical Engineers:
  - 1. ASME A13.1 - Scheme for the Identification of Piping Systems.

##### 1.3 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

#### PART 2 PRODUCTS

##### 2.1 NAMEPLATES

- A. Product Description: Laminated three-layer plastic with engraved black letters on light contrasting background color.

#### PART 3 EXECUTION

##### 3.1 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.

##### 3.2 INSTALLATION

- A. Install identifying devices after completion of coverings and painting.
- B. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive.
- C. Identify HVAC equipment with plastic nameplates.
- D. For exposed natural gas lines other than steel pipe, attach yellow pipe labels with "GAS" in black lettering, at maximum 5 foot spacing.

END OF SECTION

## SECTION 23 05 93

### TESTING, ADJUSTING, AND BALANCING FOR HVAC

#### PART 1 GENERAL

##### 1.1 WORK INCLUDES

- A. Section Includes:
  - 1. Testing adjusting, and balancing of air systems.

##### 1.2 REFERENCES

- A. Associated Air Balance Council:
  - 1. AABC MN-1 - National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems.
- B. American Society of Heating, Refrigerating and Air-Conditioning Engineers:
  - 1. ASHRAE 111 - Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning and Refrigeration Systems.
- C. Natural Environmental Balancing Bureau:
  - 1. NEBB - Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems.
- D. Testing Adjusting and Balancing Bureau:
  - 1. TABB - International Standards for Environmental Systems Balance.

##### 1.3 SUBMITTALS

- A. Prior to commencing Work, submit proof of latest calibration date of each instrument.
- B. Test Reports: Indicate data on forms containing information indicated in Schedules.
- C. Field Reports: Indicate deficiencies preventing proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
- D. Submit draft copies of report for review prior to final acceptance of Project.
- E. Furnish reports in binder manuals, complete with table of contents page and indexing tabs, with cover identification at front and side. Include set of reduced drawings with air outlets and equipment identified to correspond with data sheets, and indicating thermostat locations.

##### 1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of balancing valves and rough setting.

- B. Operation and Maintenance Data: Furnish final copy of testing, adjusting, and balancing report inclusion in operating and maintenance manuals.

## 1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with AABC MN-1 National Standards for Field Measurement and Instrumentation, Total System Balance; NEBB Procedural Standards for Testing, Balancing and Adjusting of Environmental Systems or TABB International Quality Assurance program.

## 1.6 QUALIFICATIONS

- A. Perform Work under supervision of registered professional engineer experienced in performance of this Work and licensed in State of Illinois.

## 1.7 SEQUENCING

- A. Sequence balancing between completion of systems tested and Date of Substantial Completion.

## 1.8 COORDINATION

- A. TAB Contractor shall have received software training from the selected Controls Supplier applicable to the software and hardware which will be provided for this project.
- B. TAB Contractor shall have on the project site all required software and hardware necessary from the selected Controls Supplier to perform testing, adjusting and balancing required tasks.

## PART 2 PRODUCTS

Not Used.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify systems are complete and operable before commencing work. Verify the following:
  - 1. Systems are started and operating in safe and normal condition.
  - 2. HVAC control systems are installed complete and operable.
  - 3. Proper thermal overload protection is in place for electrical equipment.
  - 4. Final filters are clean and in place. If required, install temporary media in addition to final filters.
  - 5. Duct systems are clean of debris.
  - 6. Fans are rotating correctly.
  - 7. Fire and volume dampers are in place and open.
  - 8. Air coil fins are cleaned and combed.
  - 9. Access doors are closed and duct end caps are in place.
  - 10. Air outlets are installed and connected.
  - 11. Duct system leakage is minimized.

### 3.2 PREPARATION

- A. Furnish instruments required for testing, adjusting, and balancing operations.
- B. Make instruments available to Architect/Engineer to facilitate spot checks during testing.

### 3.3 INSTALLATION TOLERANCES

- A. Air Handling Systems: Adjust to within plus or minus 10 percent of design.
- B. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 10 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

### 3.4 ADJUSTING

- A. Verify recorded data represents actual measured or observed conditions.
- B. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.
- C. After adjustment, take measurements to verify balance has not been disrupted. If disrupted, verify correcting adjustments have been made.
- D. Report defects and deficiencies noted during performance of services, preventing system balance.
- E. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

### 3.5 AIR SYSTEM PROCEDURE

- A. Adjust air handling and distribution systems to obtain required or design supply, return, and exhaust air quantities.
- B. Make air flow rate measurements in main ducts by Pitot tube traverse of entire cross sectional area of duct.
- C. Measure air quantities at air inlets and outlets.
- D. Adjust distribution system to obtain:
  - 1. Space temperatures within 2 degrees F.
  - 2. Minimal objectionable drafts.
- E. Use volume control devices to regulate air quantities only to extent adjustments do not create objectionable air motion or sound levels. Effect volume control by using volume dampers located in ducts.
- F. Vary total system air quantities by adjustment of fan speeds. Provide sheave drive changes to vary fan speed. Vary branch air quantities by damper regulation.

- G. Provide system schematic with required and actual air quantities recorded at each outlet or inlet.
- H. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across fan. Make allowances for 50 percent loading of filters.
- I. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.
- J. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.
- K. At modulating damper locations, take measurements and balance at extreme conditions.

### 3.6 SCHEDULES

- A. Equipment Requiring Testing, Adjusting, and Balancing:
  - 1. Packaged Roof Top Heating/Cooling Units.
  - 2. Fans.
  - 3. Air Inlets and Outlets.
- B. Report Forms
  - 1. Title Page:
    - a. Name of Testing, Adjusting, and Balancing Agency
    - b. Address of Testing, Adjusting, and Balancing Agency
    - c. Telephone and facsimile numbers of Testing, Adjusting, and Balancing Agency
    - d. Project name
    - e. Project location
    - f. Project Architect
    - g. Project Engineer
    - h. Project Contractor
    - i. Project altitude
    - j. Report date
  - 2. Summary Comments:
    - a. Design versus final performance
    - b. Notable characteristics of system
    - c. Description of systems operation sequence
    - d. Summary of outdoor and exhaust flows to indicate building pressurization
    - e. Nomenclature used throughout report
    - f. Test conditions
  - 3. Instrument List:
    - a. Instrument
    - b. Manufacturer
    - c. Model number
    - d. Serial number
    - e. Range
    - f. Calibration date
  - 4. Electric Motors:
    - a. Manufacturer
    - b. Model/Frame

- c. HP/BHP and kW
- d. Phase, voltage, amperage; nameplate, actual, no load
- e. RPM
- f. Service factor
- g. Starter size, rating, heater elements
- h. Sheave Make/Size/Bore
- 5. V-Belt Drive:
  - a. Identification/location
  - b. Required driven RPM
  - c. Driven sheave, diameter and RPM
  - d. Belt, size and quantity
  - e. Motor sheave diameter and RPM
  - f. Center to center distance, maximum, minimum, and actual
- 6. Air Cooled Condenser:
  - a. Identification/number
  - b. Location
  - c. Manufacturer
  - d. Model number
  - e. Serial number
  - f. Entering DB air temperature, design and actual
  - g. Leaving DB air temperature, design and actual
  - h. Number of compressors
- 7. Fan Coil Data:
  - a. Manufacturer
  - b. Identification/number
  - c. Location
  - d. Model number
  - e. Size
  - f. Air flow, design and actual
  - g. Entering air temperature, design and actual
  - h. Leaving air temperature, design and actual
- 8. Return Air/Outside Air Data:
  - a. Identification/location
  - b. Design air flow
  - c. Actual air flow
  - d. Design return air flow
  - e. Actual return air flow
  - f. Design outside air flow
  - g. Actual outside air flow
  - h. Return air temperature
  - i. Outside air temperature
  - j. Required mixed air temperature
  - k. Actual mixed air temperature
  - l. Design outside/return air ratio
  - m. Actual outside/return air ratio
- 9. Exhaust Fan Data:
  - a. Location
  - b. Manufacturer



- c. Model number
  - d. Serial number
  - e. Air flow, specified and actual
  - f. Total static pressure (total external), specified and actual
  - g. Inlet pressure
  - h. Discharge pressure
  - i. Sheave Make/Size/Bore
  - j. Number of Belts/Make/Size
  - k. Fan RPM
10. Duct Traverse:
- a. System zone/branch
  - b. Duct size
  - c. Area
  - d. Design velocity
  - e. Design air flow
  - f. Test velocity
  - g. Test air flow
  - h. Duct static pressure
  - i. Air temperature
  - j. Air correction factor
11. Air Distribution Test Sheet:
- a. Air terminal number
  - b. Room number/location
  - c. Terminal type
  - d. Terminal size
  - e. Area factor
  - f. Design velocity
  - g. Design air flow
  - h. Test (final) velocity
  - i. Test (final) air flow
  - j. Percent of design air flow

END OF SECTION

## SECTION 23 07 00

### HVAC INSULATION

#### PART 1 GENERAL

##### 1.1 WORK INCLUDES

- A. Section Includes:
  - 1. HVAC ductwork insulation, jackets, and accessories.

##### 1.2 REFERENCES

- A. ASTM International:
  - 1. ASTM C534 - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form.
  - 2. ASTM C1136 - Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation.
  - 3. ASTM C1290 - Standard Specification for Flexible Fibrous Glass Blanket Insulation Used to Externally Insulate HVAC Ducts.
  - 4. ASTM E162 - Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source.
- B. Sheet Metal and Air Conditioning Contractors':
  - 1. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.

##### 1.3 SUBMITTALS

- A. Product Data: Submit product description, thermal characteristics and list of materials and thickness for each service, and location.

##### 1.4 QUALITY ASSURANCE

- A. Factory fabricated fitting covers manufactured in accordance with ASTM C450.
- B. Duct insulation, Coverings, and Linings: Maximum 25/50 flame spread/smoke developed index, when tested in accordance with ASTM E84, using specimen procedures and mounting procedures of ASTM E 2231.

##### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
- B. Protect insulation from weather and construction traffic, dirt, water, chemical, and damage, by storing in original wrapping.

## 1.6 ENVIRONMENTAL REQUIREMENTS

- A. Install insulation only when ambient temperature and humidity conditions are within range recommended by manufacturer.

## 1.7 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

# PART 2 PRODUCTS

## 2.1 MANUFACTURER

- A. Manufacturers for Glass Fiber and Mineral Fiber Insulation Products:
  - 1. CertainTeed.
  - 2. Knauf.
  - 3. Johns Manville.
  - 4. Owens-Corning.

## 2.2 DUCTWORK INSULATION

- A. TYPE D-1: ASTM C1290, Type III, flexible glass fiber, commercial grade with factory applied reinforced aluminum foil jacket meeting ASTM C1136, Type II.
  - 1. Thermal Conductivity: 0.27 at 75 degrees F.
  - 2. Maximum Operating Temperature: 250 degrees F.
  - 3. Density: 1.5 pound per cubic foot.

## 2.3 DUCTWORK INSULATION ACCESSORIES

- A. Vapor Retarder Tape:
  - 1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.
- B. Vapor Retarder Lap Adhesive: Compatible with insulation.
- C. Adhesive: Waterproof, ASTM E162 fire-retardant type.
- D. Liner Fasteners: Galvanized steel, self-adhesive pad with integral head.
- E. Adhesives: Compatible with insulation.

# PART 3 EXECUTION

## 3.1 EXAMINATION

- A. Verify ductwork has been tested before applying insulation materials.

B. Verify surfaces are clean and dry, with foreign material removed.

### 3.2 INSTALLATION - DUCTWORK SYSTEMS

A. Duct dimensions indicated on Drawings are finished inside dimensions.

B. Insulated ductwork conveying air below ambient temperature:

1. Provide insulation with vapor retarder jackets.
2. Finish with tape and vapor retarder jacket.
3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
4. Insulate entire system including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.

C. Insulated ductwork conveying air above ambient temperature:

1. Provide with or without standard vapor retarder jacket.
2. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.

D. External Glass Fiber Duct Insulation:

1. Secure insulation with vapor retarder with wires and seal jacket joints with vapor retarder adhesive or tape to match jacket.
2. Secure insulation without vapor retarder with staples, tape, or wires.
3. Install without sag on underside of ductwork. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift ductwork off trapeze hangers and insert spacers.
4. Seal vapor retarder penetrations by mechanical fasteners with vapor retarder adhesive.
5. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.

### 3.3 SCHEDULES

B. Ductwork Insulation Schedule:

DUCTWORK SYSTEM	INSULATION TYPE	INSULATION THICKNESS inches
Supply & Return Ducts (externally insulated) Thickness indicated is installed thickness.	D-1	2.0
Exhaust Ducts	D-1	2.0

END OF SECTION

## SECTION 23 11 23

### FACILITY NATURAL-GAS PIPING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Natural gas piping above grade.
  - 2. Unions and flanges.
  - 3. Valves.
  - 4. Pipe hangers and supports.
  - 5. Strainers.
  - 6. Natural gas pressure regulators.
  - 7. Natural gas pressure relief valves.
  - 8. Underground pipe markers.
- B. Related Sections:
  - 1. Section 09 90 00 - Painting and Coating: Product requirements for painting for placement by this section.
  - 2. Section 23 05 29 - Hangers and Supports for HVAC Piping and Equipment: Product requirements for pipe hangers and supports for placement by this section.
  - 3. Section 23 05 53 - Identification for HVAC Piping and Equipment: Product requirements for valve and pipe identification for placement by this section.

##### 1.2 REFERENCES

- A. American National Standards Institute:
  - 1. ANSI Z21.15 - Manually Operated Gas Valves for Appliances, Appliance Connector Valves and Hose End Valves.
- B. American Society of Mechanical Engineers:
  - 1. ASME B16.3 - Malleable Iron Threaded Fittings.
  - 2. ASME B16.33 - Manually Operated Metallic Gas Valves for Use in Gas Piping Systems Up to 125 psig (sizes 1/2 - 2).
  - 3. ASME B31.9 - Building Services Piping.
  - 4. ASME Section IX - Boiler and Pressure Vessel Code - Welding and Brazing Qualifications.
- C. ASTM International:
  - 1. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
  - 2. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.
  - 3. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.
- D. American Welding Society:
  - 1. AWS D1.1 - Structural Welding Code - Steel.

- E. Manufacturers Standardization Society of the Valve and Fittings Industry:
  - 1. MSS SP 69 - Pipe Hangers and Supports - Selection and Application.
  - 2. MSS SP 78 - Cast Iron Plug Valves, Flanged and Threaded Ends.
  - 3. MSS SP 110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.
- F. National Fire Protection Association:
  - 1. NFPA 54 - National Fuel Gas Code.
- G. Underwriters Laboratories Inc.:
  - 1. UL 842 - Valves for Flammable Fluids.

### 1.3 SYSTEM DESCRIPTION

- A. Where more than one piping system material is specified, provide compatible system components and joints. Use non-conducting dielectric connections when joining dissimilar metals in systems.
- B. Provide flanges, unions, or couplings at locations requiring servicing. Use unions, flanges, or couplings downstream of valves and at equipment connections. Do not use direct welded or threaded connections to valves, equipment.
- C. Provide pipe hangers and supports in accordance with ASME B31.9, ASTM F708 and MSS SP 69.
- D. Use plug or ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

### 1.4 SUBMITTALS

- A. Product Data:
  - 1. Piping: Submit data on pipe materials, fittings, and accessories. Submit manufacturers catalog information.
  - 2. Valves: Submit manufacturers catalog information with valve data and ratings for each service.
  - 3. Hangers and Supports: Submit manufacturers catalog information including load capacity.
  - 4. Piping Specialties: Submit manufacturers catalog information including capacity, rough-in requirements, and service sizes for the following:
    - a. Strainers.
    - b. Natural gas pressure regulators.
    - c. Natural gas pressure relief valves.

### 1.5 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of valves, piping system, and system components.
- B. Operation and Maintenance Data: Submit for valves and gas pressure regulators installation instructions, spare parts lists.

## 1.6 QUALITY ASSURANCE

- A. Perform natural gas Work in accordance with NFPA 54.
- B. Perform work in accordance with local gas company requirements.
- C. Perform Work in accordance with ASME B31.9 code for installation of piping systems and ASME Section IX for welding materials and procedures.
- D. Perform Work in accordance AWS D1.1 for welding hanger and support attachments to building structure.
- E. Furnish shutoff valves complying with ASME B16.33 or ANSI Z21.15.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Protect piping and fittings from soil and debris with temporary end caps and closures. Maintain in place until installation. Furnish temporary protective coating on cast iron and steel valves.

## 1.8 ENVIRONMENTAL REQUIREMENTS

- A. Do not install underground piping when bedding is wet or frozen.

## 1.9 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

## 1.10 COORDINATION

- A. Coordinate trenching/backfilling of buried piping systems.

# PART 2 PRODUCTS

## 2.1 NATURAL GAS PIPING, ABOVE GRADE

- A. Steel Pipe: ASTM A53/A53M Schedule 40 black.
  - 1. Fittings: ASME B16.3, malleable iron, or ASTM A234/A234M forged steel welding type.
  - 2. Joints: Threaded for pipe 2 inch and smaller; welded for pipe 2-1/2 inches and larger.

## 2.2 REGULATOR VENT PIPING, ABOVE GRADE

- A. Indoors: Same as natural gas piping, above grade.

## 2.3 UNIONS AND FLANGES

- A. Unions for Pipe 2 inches and Smaller:
  - 1. Ferrous Piping: Class 150, malleable iron, threaded.

2. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

- B. Flanges for Pipe 2-1/2 inches and Larger:
  1. Ferrous Piping: Class 150, forged steel, slip-on flanges.
  2. Gaskets: 1/16 inch thick preformed neoprene gaskets.

## 2.4 BALL VALVES

- A. 1/4 inch to 1 inch: MSS SP 110, Class 125, two piece, threaded ends, bronze body, chrome plated bronze ball, reinforced teflon seats, blow-out proof stem, lever handle, UL 842 listed for flammable liquids and LPG, full port.
- B. 1-1/4 inch to 3 inch: MSS SP 110, Class 125, two piece, threaded ends, bronze body, chrome plated bronze ball, reinforced teflon seats, blow-out proof stem, lever handle, UL 842 listed for flammable liquids and LPG, conventional port.

## 2.5 PLUG VALVES

- A. 2 inches and Smaller: MSS SP 78, Class 150, semi-steel construction, round port, full pipe area, pressure lubricated, teflon packing, threaded ends. Furnish one plug valve wrench for every ten plug-valves with minimum of one wrench.
- B. 2-1/2 inches and Larger: MSS SP 78, Class 150, semi-steel construction, round port, full pipe area, pressure lubricated, teflon packing, flanged ends. Furnish wrench-operated.

## 2.6 PIPE HANGERS AND SUPPORTS

- A. Conform to NFPA 54, ASME 31.9, ASTM F708 and MSS SP 69.
- B. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Carbon steel, adjustable swivel, split ring.
- C. Hangers for Pipe Sizes 2 inches and Larger: Carbon steel, adjustable, clevis.
- D. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
- E. Wall Support for Pipe 3 inches and Smaller: Cast iron hook.
- F. Vertical Support: Angle ring.
- G. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
- H. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

## 2.7 STRAINERS

- A. 2 inch and Smaller: Screwed brass or iron body for 175 psig working pressure, Y pattern with 1/32 inch stainless steel perforated screen.



- B. 2-1/2 inch to 4 inch: Flanged iron body for 175 psig working pressure, Y pattern with 3/64 inch stainless steel perforated screen.
- C. 5 inch and Larger: Flanged iron body for 175 psig working pressure, basket pattern with 1/8 inch stainless steel perforated screen.

## 2.8 NATURAL GAS PRESSURE REGULATORS

- A. Product Description: Spring loaded, general purpose, self-operating service regulator including internal relief type diaphragm assembly and vent valve. Diaphragm case can be rotated 360 degrees in relation to body.
  - 1. Comply with ANSI Z21.80.
  - 2. Temperatures: minus 20 degrees F to 150 degrees F.
  - 3. Body: Cast iron.
  - 4. Spring case, lower diaphragm casing, union ring, seat ring and disk holder: Aluminum.
  - 5. Disk, diaphragm, and O-ring: Nitrile.
  - 6. Maximum inlet pressure: 150 psig.
  - 7. Furnish sizes 2 inches and smaller with threaded ends. Furnish sizes 2-1/2 inches and larger with flanged ends.

## 2.9 NATURAL GAS PRESSURE RELIEF VALVES

- A. Product Description: Spring loaded type relief valve.
  - 1. Body: Aluminum.
  - 2. Diaphragm: Nitrile.
  - 3. Orifice: Brass.
  - 4. Maximum operating temperature: 150 degrees F.
  - 5. Inlet Connections: Threaded.
  - 6. Outlet or Vent Connection: Same size as inlet connection.

# PART 3 EXECUTION

## 3.1 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

## 3.2 INSTALLATION - PIPE HANGERS AND SUPPORTS

- A. Install hangers and supports in accordance with ASME B31.9, ASTM F708 and MSS SP 69.
- B. Support horizontal piping hangers as scheduled.
- C. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.

- D. Place hangers within 12 inches of each horizontal elbow.
- E. Install hangers to allow 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
- F. Support vertical piping at every floor. Support riser piping independently of connected horizontal piping.
- G. Where installing several pipes in parallel and at same elevation, provide multiple pipe hangers or trapeze hangers.
- H. Provide sheet lead packing between hanger or support and piping.
- I. Prime coat exposed steel hangers and supports. Finish paint exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.
- J. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.

### 3.3 INSTALLATION - ABOVE GROUND PIPING SYSTEMS

- A. Install natural gas piping in accordance with NFPA 54.
- B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- C. Route piping in orderly manner and maintain gradient.
- D. Where required, bend pipe with pipe bending tools in accordance with procedures intended for that purpose.
- E. Install piping to conserve building space and not interfere with use of space.
- F. Size and install gas piping to provide sufficient gas to supply maximum appliance demand at pressure higher than appliance minimum inlet pressure.
- G. Group piping whenever practical at common elevations.
- H. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- I. Sleeve pipe passing through partitions, walls and floors. Refer to Section 23 05 29.
- J. Provide clearance for installation of insulation and access to valves and fittings.
- K. Provide access where valves and fittings are not exposed.

- L. Where pipe support members are welded to structural building framing, scrape, brush clean, weld, and apply one coat of zinc rich primer.
- M. Provide support for utility meters in accordance with requirements of utility company.
- N. Install vent piping from gas pressure reducing valves to outdoors and terminate in weatherproof hood. Protect vent against entry of insects and foreign material.
  - 1. Minimum Vent Size: Connection size at regulator vent connection.
  - 2. Run individual vent line from each relief device, independent of breather vents.
- O. Breather vents may be manifolded together with piping sized for combined appliance vent requirements.
- P. Prepare pipe, fittings, supports, and accessories not pre-finished, ready for finish painting.
- Q. Install identification on piping systems including underground piping.
- R. Install valves with stems upright or horizontal, not inverted.
- S. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.
- T. Provide new gas service complete with gas meter and regulators. Gas service distribution piping to have initial minimum pressure of 11 inch wg.

### 3.4 FIELD QUALITY CONTROL

- A. Where gas appliance will be damaged by test pressure, disconnect appliance and cap piping during pressure test. Reconnect appliance after pressure test and leak test connection.
- B. Where gas appliance is designed for operating pressures equal to or greater than piping test pressure, provide gas valve to isolate appliance or equipment from gas test pressure.
- C. Pressure test natural gas piping in accordance with NFPA 54.
- D. When pressure tests do not meet specified requirements, remove defective work, replace and retest.
- E. Immediately after gas is applied to a new system, or a system has been restored after gas service interruption, check pipe for leakage.
  - 1. Where leakage is detected, shut off gas supply until necessary repairs are complete.
- F. Do not place appliances in service until leak testing and repairs are complete.

### 3.5 SCHEDULES

- A. Pipe Hanger Spacing:

PIPE SIZE Inches	COPPER TUBING MAXIMUM HANGER SPACING Feet	STEEL PIPE MAXIMUM HANGER SPACING Feet	COPPER TUBING MINIMUM HANGER ROD DIAMETER Inches	STEEL PIPE MINIMUM HANGER ROD DIAMETER Inches
1/2	4	6	3/8	3/8
3/4	6	7	3/8	3/8
1	6	7	3/8	3/8
1-1/4	8	7	3/8	3/8
1-1/2	8	9	3/8	3/8
2	8	10	3/8	3/8
2-1/2	8	10	1/2	1/2
3	8	10	1/2	1/2
4	8	10	1/2	5/8

END OF SECTION

## SECTION 23 31 00

### HVAC DUCTS AND CASINGS

#### PART 1 GENERAL

##### 1.1 WORK INCLUDES

- A. Contractor provide:
  - 1. Duct Materials.
  - 2. Insulated flexible ducts.
  - 3. Ductwork fabrication.
- B. Related Sections:
  - 1. Section 23 05 29 - Hangers and Supports for HVAC Piping and Equipment: Product requirements for hangers, supports and sleeves for placement by this section.
  - 2. Section 23 33 00 - Air Duct Accessories: Product requirements for duct accessories for placement by this section.

##### 1.2 REFERENCES

- A. ASTM International:
  - 1. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
  - 2. ASTM A90/A90M - Standard Test Method for Weight Mass of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.
  - 3. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
  - 4. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
  - 5. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. National Fire Protection Association:
  - 1. NFPA 90A - Standard for the Installation of Air Conditioning and Ventilating Systems.
  - 2. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations.
- C. Sheet Metal and Air Conditioning Contractors:
  - 1. SMACNA - Fibrous Glass Duct Construction Standards.
  - 2. SMACNA - HVAC Air Duct Leakage Test Manual.
  - 3. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.
- D. Underwriters Laboratories Inc.:
  - 1. UL 181 - Factory-Made Air Ducts and Connectors.

### 1.3 PERFORMANCE REQUIREMENTS

- A. Variation of duct configuration or sizes other than those of equivalent or lower loss coefficient is not permitted except by written permission. Size round ducts installed in place of rectangular ducts in accordance with ASHRAE table of equivalent rectangular and round ducts.

### 1.4 SUBMITTALS

- A. Shop Drawings: Submit duct fabrication drawings, drawn to scale not smaller than 1/4" inch equals 1 foot, on drawing sheets same size as Contract Documents, indicating:
  - 1. Fabrication, assembly, and installation details, including plans, elevations, sections, details of components, and attachments to other work.
  - 2. Duct layout, indicating pressure classifications and sizes in plan view. For exhaust duct systems, indicate classification of materials handled as defined in this section.
  - 3. Fittings.
  - 4. Reinforcing details and spacing.
  - 5. Seam and joint construction details.
  - 6. Penetrations through fire rated and other walls.
  - 7. Terminal unit, coil, and humidifier installations.
  - 8. Hangers and supports, including methods for building attachment, vibration isolation, and duct attachment.
- B. Product Data: Submit data for duct materials/duct connectors.

### 1.5 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of ducts and duct fittings. Record changes in fitting location and type. Show additional fittings used.

### 1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with SMACNA - HVAC Duct Construction Standards - Metal and flexible.
- B. Construct ductwork to NFPA 90A and NFPA 96 standards.

### 1.7 ENVIRONMENTAL REQUIREMENTS

- A. Do not install duct sealant when temperatures are less than those recommended by sealant manufacturers.
- B. Maintain temperatures during and after installation of duct sealant.

### 1.8 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

## PART 2 PRODUCTS

### 2.1 DUCT MATERIALS

- A. Galvanized Steel Ducts: ASTM A653/A653M galvanized steel sheet, lock-forming quality, having G6 zinc coating of in conformance with ASTM A90/A90M.
- B. Fasteners: Rivets, bolts, or sheet metal screws.
- C. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

### 2.2 INSULATED FLEXIBLE DUCTS

- A. Product Description: Black polymer film supported by helical-wound spring steel wire; fiberglass insulation; aluminized vapor barrier film.
  - 1. Pressure Rating: 4 inches wg positive and 0.5 inches wg negative.
  - 2. Maximum Velocity: 4000 fpm.
  - 3. Temperature Range: -20 degrees F to 175 degrees F.
  - 4. Thermal Resistance: 4.2 square feet-hour-degree F per BTU.

### 2.3 DUCTWORK FABRICATION

- A. Fabricate and support rectangular ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible and as indicated on Drawings. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- B. with SMACNA HVAC Duct Construction Standards - Metal and Flexible (Round Duct Construction Standards), and as indicated on Drawings. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- C. Construct T's, bends, and elbows with minimum radius 1-1/2 times centerline duct width. Where not possible and where rectangular elbows are used, provide airfoil turning vanes. Where acoustical lining is indicated, furnish turning vanes of perforated metal with glass fiber insulation.
- D. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
- E. Fabricate continuously welded round and oval duct fittings two gages heavier than duct gages indicated in SMACNA Standard. Minimum 4 inch cemented slip joint, brazed or electric welded. Prime coat welded joints.
- F. Provide standard 45-degree lateral wye takeoffs. When space does not allow 45-degree lateral wye takeoff, use 90-degree conical tee connections.
- G. Seal joints between duct sections and duct seams with welds, gaskets, mastic adhesives, mastic plus embedded fabric systems, or tape.
  - 1. Sealants, Mastics and Tapes: Conform to UL 181A. Provide products bearing appropriate UL 181A markings.

2. Do not provide sealing products not bearing UL approval markings.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify sizes of equipment connections before fabricating transitions.

### 3.2 INSTALLATION

- A. Install and seal ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.
- B. Install glass fiber ducts in accordance with SMACNA Fibrous Glass Duct Construction Standards. Obtain manufacturer's inspection and acceptance of fabrication and installation at beginning of installation.
- C. During construction, install temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
- D. Use crimp joints with or without bead or beaded sleeve couplings for joining round duct sizes 8 inch and smaller.
- E. Install duct hangers and supports in accordance with Section 23 05 29.
- F. Use double nuts and lock washers on threaded rod supports.
- G. Connect flexible ducts to metal ducts with draw bands.
- H. Install kitchen range hoods in accordance with NFPA 96.
- I. Exhaust Outlet Locations:
  1. Minimum Distance from Property Lines: 3 feet.
  2. Minimum Distance from Building Openings: 3 feet.
  3. Minimum Distance from Outside Air Intakes: 10 feet.

### 3.3 INTERFACE WITH OTHER PRODUCTS

- A. Connect air outlets and inlets to supply ducts directly or with six foot maximum length of flexible duct. Do not use flexible duct to change direction.

### 3.4 SCHEDULES

- A. Ductwork Material Schedule:

AIR SYSTEM	MATERIAL
Supply	Steel



Return and Relief	Steel
General Exhaust	Steel

B. Ductwork Pressure Class Schedule:

AIR SYSTEM	PRESSURE CLASS
Supply	1 inch wg
Return	1/2 inch wg regardless of velocity.
General Exhaust	1/2 inch wg regardless of velocity.

END OF SECTION

## SECTION 23 33 00

### AIR DUCT ACCESSORIES

#### PART 1 GENERAL

##### 1.1 WORK INCLUDES

- A. Section Includes:
  - 1. Volume control dampers.
  - 2. Flexible duct connections.
- B. Related Sections:
  - 1. Section 23 31 00 - HVAC Ducts and Casings: Requirements for duct construction and pressure classifications.

##### 1.2 REFERENCES

- A. Air Movement and Control Association International, Inc.:
  - 1. AMCA 500 - Test Methods for Louvers, Dampers, and Shutters.
- B. National Fire Protection Association:
  - 1. NFPA 90A - Standard for the Installation of Air Conditioning and Ventilating Systems.
- C. Sheet Metal and Air Conditioning Contractors:
  - 1. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.
- D. Underwriters Laboratories Inc.:
  - 1. UL 555 - Standard for Safety for Fire Dampers.

##### 1.3 QUALITY ASSURANCE

- A. Damper pressure drop ratings based on tests and procedures performed in accordance with AMCA 500.

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

- A. Protect dampers from damage to operating linkages and blades.
- B. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly indicating manufacturer and material.
- C. Storage: Store materials in a dry area indoor, protected from damage.
- D. Handling: Handle and lift dampers in accordance with manufacturer's instructions. Protect materials and finishes during handling and installation to prevent damage.

## 1.5 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

## PART 2 PRODUCTS

### 2.1 VOLUME CONTROL DAMPERS

- A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated on Drawings.
- B. Multi-Blade Damper: Fabricate of opposed blade pattern with maximum blade sizes 8 x 72 inch. Assemble center and edge crimped blades in prime coated or galvanized frame channel with suitable hardware.
- C. End Bearings: Except in round ductwork 12 inches and smaller, furnish end bearings. On multiple blade dampers, furnish oil-impregnated nylon or sintered bronze bearings. Furnish closed end bearings on ducts having pressure classification over 2 inches wg.
- D. Quadrants:
  - 1. Furnish locking, indicating quadrant regulators on single and multi-blade dampers.
  - 2. On insulated ducts mount quadrant regulators on standoff mounting brackets, bases, or adapters.
  - 3. Where rod lengths exceed 30 inches furnish regulator at both ends.

### 2.2 FLEXIBLE DUCT CONNECTIONS

- A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated on Drawings.
- B. Connector: Fabric crimped into metal edging strip.
  - 1. Fabric: UL listed fire-retardant neoprene coated woven glass fiber fabric conforming to NFPA 90A, minimum density 30 oz per sq yd.
  - 2. Net Fabric Width: Approximately 2 inches wide.
  - 3. Metal: 3 inch wide, 24 gage galvanized steel.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify ducts and equipment installation are ready for accessories.
- B. Check location of air outlets and inlets and make necessary adjustments in position to conform to architectural features, symmetry, and lighting arrangement.

### 3.2 INSTALLATION

- A. Install in accordance with NFPA 90A, and follow SMACNA HVAC Duct Construction Standards - Metal and Flexible. Refer to Section 23 31 00 for duct construction and pressure class.

END OF SECTION

## SECTION 23 34 00

### HVAC FANS

#### PART 1 GENERAL

##### 1.1 WORK INCLUDES

- A. Section Includes:
  - 1. Downblast centrifugal roof fans.
- B. Related Sections:
  - 1. Section 23 07 00 - HVAC Insulation: Product requirements for power ventilators for placement by this section.
  - 2. Section 23 31 00 - HVAC Ducts and Casings: Product requirements for hangers for placement by this section.
  - 3. Section 23 33 00 - Air Duct Accessories: Product requirements for duct accessories for placement by this section.

##### 1.2 REFERENCES

- A. 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.
- B. ASTM International:
  - 1. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
- C. National Electrical Manufacturers Association:
  - 1. NEMA MG 1 - Motors and Generators.
  - 2. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- D. Underwriters Laboratories Inc.:
  - 1. UL 705 - Power Ventilators.

##### 1.3 SUBMITTALS

- A. 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.

#### 1.4 CLOSEOUT SUBMITTALS

- A. 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. UL Compliance: UL listed and labeled, designed, manufactured, and tested in accordance with UL 705.
- D. Energy Recovery Unit Wheel Energy Transfer Rating: Meet ARI 1060.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect motors, shafts, and bearings from weather and construction dust.

#### 1.7 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

### PART 2 PRODUCTS

#### 2.1 DOWNBLAST CENTRIFUGAL ROOF FANS

- A. Manufacturers:
  - 1. Greenheck.
  - 2. Loren Cook.
  - 3. Substitutions: Product Substitution Requirements.
- B. Fan Unit: Downblast type. Direct drive, with spun aluminum housing; resilient mounted motor; aluminum wire bird screen; square base to suit roof curb with continuous curb gaskets.
- C. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed; variable and adjustable pitch motor sheave selected so required rpm is obtained with sheaves set at mid-position; fan shaft with self-aligning pre-lubricated ball bearings.
- D. Motor: Open drip proof.
- E. Roof Curb: 14 inch high self-flashing of galvanized steel construction with continuously welded seams, and factory installed nailer strip.
- F. Disconnect Switch: Factory wired, non-fusible, in fan housing for thermal overload protected motor, NEMA 250 Type 1 enclosure.

- G. Accessories:
  - 1. Backdraft Damper: Gravity actuated, aluminum multiple blade construction, felt edged with offset hinge pin, nylon bearings, blades linked [and line voltage motor drive, power open, spring return].
  - 2. Fan speed controller.
  - 3. All other accessories as scheduled.
- H. Electrical Characteristics and Components:
  - 1. Electrical Characteristics:
    - a. 120 volts, single phase, 60 Hz.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Verify roof curbs are installed and dimensions are as shown on shop drawings.
- B. Secure roof fans with stainless steel lag screws to roof curb.
- C. Install backdraft dampers on inlet to roof exhaust fans.
- D. Provide sheaves required for final air balance.

### 3.2 PROTECTION OF FINISHED WORK

- A. Do not operate fans for until ductwork is clean, filters in place, bearings lubricated, and fan has been test run under observation.

END OF SECTION

## SECTION 23 81 03

### PACKAGED ROOFTOP AIR CONDITIONING UNITS - SMALL CAPACITY

#### PART 1 GENERAL

##### 1.1 WORK INCLUDES

- A. Section Includes:
  - 1. Packaged rooftop air conditioning unit.
- B. Related Sections:
  - 1. Section 23 05 48 - Vibration and Seismic Controls for HVAC Piping and Equipment: Vibration isolators.
  - 2. Section 23 33 00 - Air Duct Accessories: Flexible connections.

##### 1.2 REFERENCES

- A. Air-Conditioning and Refrigeration Institute:
  - 1. ARI 210/240 - Unitary Air-Conditioning and Air-Source Heat Pump Equipment.
  - 2. ARI 270 - Sound Rating of Outdoor Unitary Equipment.
- B. Air Movement and Control Association International, Inc.:
  - 1. AMCA 500 - Test Methods for Louvers, Dampers, and Shutters.
- C. American Society of Heating, Refrigerating and Air-Conditioning Engineers:
  - 1. ASHRAE 52.1 - Gravimetric and Dust-Spot Procedures for Testing Air-Cleaning Devices Used in General Ventilation for Removing Particulate Matter.
  - 2. ASHRAE 62 - Ventilation for Acceptable Indoor Air Quality.
  - 3. ASHRAE 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings.
- D. ASTM International:
  - 1. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus.
- E. National Fire Protection Association:
  - 1. NFPA 54 - National Fuel Gas Code.
  - 2. NFPA 90A - Standard for the Installation of Air Conditioning and Ventilating Systems.

##### 1.3 DEFINITIONS

- A. Energy Efficiency Ratio (EER) - Ratio of net cooling capacity in Btuh to total rate of electric input in watts under designated operating conditions.
- B. Seasonal Energy Efficiency Ratio (SEER) - Total cooling output of an air conditioner during its normal annual usage period for cooling (in Btu) divided by total electric energy input during the same period (in Wh).



#### 1.4 SUBMITTALS

- A. Product Data: Submit data indicating:
  - 1. Cooling and heating capacities.
  - 2. Dimensions.
  - 3. Weights.
  - 4. Rough-in connections and connection requirements.
  - 5. Duct connections.
  - 6. Electrical requirements with electrical characteristics and connection requirements.
  - 7. Controls.
  - 8. Accessories.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of controls installed remotely from units.
- B. Operation and Maintenance Data: Submit manufacturer's descriptive literature, operating instructions, installation instructions, and maintenance and repair data.

#### 1.6 QUALITY ASSURANCE

- A. Cooling Capacity: Rate in accordance with ARI 210/240.
- B. Sound Rating: Measure in accordance with ARI 270.
- C. Insulation and adhesives: Meet requirements of NFPA 90A.
- D. Performance Requirements: Conform to minimum EER prescribed by ASHRAE 90.1 when tested in accordance with ARI 210/240.
- E. Outside Air Damper Leakage: Test in accordance with AMCA 500.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Accept units on site. Inspect for damage.
- B. Protect units from damage by storing off roof until roof mounting curbs are in place.

#### 1.8 COORDINATION

- A. Coordinate installation of roof curbs with roof structure, roof deck and roof membrane installation.

#### 1.9 WARRANTY

- A. Furnish five year manufacturers warranty for compressors.
- B. Furnish five year manufacturers warranty for heat exchangers.

## PART 2 PRODUCTS

### 2.1 ROOFTOP AIR CONDITIONING UNITS

- A. Manufacturers:
  - 1. Carrier.
  - 2. Trane.
  - 3. York.
  - 4. Rheem.
- B. Product Description: Self-contained, packaged, factory assembled and wired, consisting of cabinet, supply fan, refrigerant cooling coil, compressor, refrigeration circuit, condenser, gas-fired heating section, air filters, mixed air casing, controls, and accessories.
- C. Configuration: Downflow air delivery.
- D. Roof Mounting Curb: Refer to Section 23 05 48.
- E. Cabinet:
  - 1. Designed for outdoor installation with weatherproof construction.
  - 2. Panels: Constructed of steel/galvanized steel with baked enamel finish meeting salt spray test in accordance with ASTM B117. Furnish access doors or removable access panels.
  - 3. Insulation: Factory applied to exposed vertical and horizontal panels. 1 inch thick neoprene coated glass fiber with edges protected from erosion.
- F. Supply Fan: Forward curved centrifugal type, resiliently mounted with direct drive high efficiency motor. Motor permanently lubricated with built-in thermal overload protection.
- G. Evaporator Coil: Constructed of copper tubes expanded onto aluminum fins. Galvanized drain pan with piping connection. Factory leak tested under water.
- H. Compressor: Hermetically sealed, resiliently mounted with positive lubrication, and internal motor overload protection. Furnish internal vibration isolators, short cycle protection.
- I. Refrigeration circuit: Furnish the following for each circuit thermal expansion valve, filter-drier, suction, discharge, and liquid line service valves with gauge ports, high and low pressure safety controls. Dehydrate and factory charge each circuit with oil and refrigerant.
- J. Condenser:
  - 1. Coil: Copper tube aluminum fin coil assembly and coil guard. Factory leak tested under water.
  - 2. Condenser Fan: Direct drive propeller fans statically and dynamically balanced. Wired to operate with compressor. Motor permanently lubricated with built-in thermal overload protection. Furnish high efficiency fan motors.
- K. Gas-Fired Heating Section:
  - 1. Fuel: Natural gas.
  - 2. Heat Exchangers: Aluminized steel, welded construction.

3. Gas Burner: Induced draft type burner with adjustable combustion air supply, pressure regulator, gas valves, manual shut-off, intermittent spark or glow coil ignition, flame sensing device. Require unit fan operation before allowing gas valve to open.

L. Air Filters: 2 inch thick glass fiber disposable media in metal frames.

M. Controls:

1. Thermostat: 7 day programmable electronic space thermostat with modulating heating and cooling with automatic changeover and heating setback and cooling setup capability. Furnish Accessories:
2. Convenience Outlet: Factory installed, 115 volt, 15 amp, GFCI type, internally mounted.
3. All other accessories as scheduled.

## 2.2 ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Electrical Characteristics: As scheduled.

B. Disconnect Switch: Factory mounted, non-fused type, interlocked with access door, accessible from outside unit, with power lockout capability.

## PART 3 EXECUTION

### 3.1 EXAMINATION

A. Verify roof curbs are installed and dimensions are as shown on shop drawings.

### 3.2 INSTALLATION

A. Install units on vibration isolators. Refer to Section 23 05 48.

B. Connect units to supply and return ductwork with flexible connections. Refer to Section 23 33 00.

C. Install condensate piping with trap and route from drain pan to splash block on roof.

D. Install components furnished loose for field mounting.

E. Install electrical devices furnished loose for field mounting.

F. Install control wiring between unit and field installed accessories.

### 3.3 CLEANING

A. Vacuum clean coils and inside of unit cabinet.

B. Install new throwaway filters in units at Substantial Completion.

### 3.4 DEMONSTRATION

A. Demonstrate unit operation and maintenance.

- B. Furnish services of manufacturer's technical representative for one 8 hour day to instruct Owner's personnel in operation and maintenance of units. Schedule training with Owner, provide at least 7 days notice to Architect/Engineer of training date.

END OF SECTION

## SECTION 26 05 19

### LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes building wire and cable and wiring connectors and connections.
- B. Related Sections:
  - 1. Section 26 05 53 - Identification for Electrical Systems: Product requirements for wire identification.

##### 1.2 REFERENCES

- A. International Electrical Testing Association:
  - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- B. National Fire Protection Association:
  - 1. NFPA 70 - National Electrical Code.
  - 2. NFPA 262 - Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.
- C. Underwriters Laboratories, Inc.:
  - 1. UL 1277 - Standard for Safety for Electrical Power and Control Tray Cables with Optional Optical-Fiber Members.

##### 1.3 SYSTEM DESCRIPTION

- A. Product Requirements: Provide products as follows:
  - 1. Solid conductor for feeders and branch circuits 10 AWG and smaller.
  - 2. Stranded conductors for control circuits.
  - 3. Conductor not smaller than 12 AWG for power and lighting circuits.
  - 4. Conductor not smaller than 16 AWG for control circuits.
  - 5. Increase wire size in branch circuits to limit voltage drop to a maximum of 3 percent.
- B. Wiring Methods: Provide the following wiring methods:
  - 1. Concealed Dry Interior Locations: Use only building wire, Type metal clad cable.
  - 2. Exposed Dry Interior Locations: Use only building wire, Type metal clad cable.
  - 3. Above Accessible Ceilings: Use only building wire, Type metal clad cable.

##### 1.4 DESIGN REQUIREMENTS

- A. Conductor sizes are based on copper.

## 1.5 SUBMITTALS

- A. Division 01 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit for building wire and each cable assembly type.
- C. Design Data: Indicate voltage drop and ampacity calculations for aluminum conductors substituted for copper conductors.
- D. Test Reports: Indicate procedures and values obtained.

## 1.6 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of components and circuits.

## 1.7 QUALITY ASSURANCE

- A. Provide wiring materials located in plenums with peak optical density not greater than 0.5, average optical density not greater than 0.15, and flame spread not greater than 5 feet (1.5 m) when tested in accordance with NFPA 262.
- B. Maintain one copy of each document on site.

## 1.8 FIELD MEASUREMENTS

- A. Verify field measurements are as indicated on Drawings.

## 1.9 COORDINATION

- A. Where wire and cable destination is indicated and routing is not shown, determine routing and lengths required.
- B. Wire and cable routing indicated is approximate unless dimensioned. Include wire and cable lengths within 25 ft of length shown.

# PART 2 PRODUCTS

## 2.1 METAL CLAD CABLE

- A. Conductor: Copper.
- B. Insulation Voltage Rating: 600 volts.
- C. Insulation Temperature Rating: 90 degrees C.
- D. Insulation Material: Thermoplastic.
- E. Armor Material: Aluminum.

F. Armor Design: Corrugated tube.

## 2.2 TERMINATIONS

- A. Terminal Lugs for Wires 6 AWG and Smaller: Solderless, compression type copper.
- B. Lugs for Wires 4 AWG and Larger: Color keyed, compression type copper, with insulating sealing collars.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify interior of building has been protected from weather.
- B. Verify mechanical work likely to damage wire and cable has been completed.
- C. Verify raceway installation is complete and supported.

### 3.2 PREPARATION

- A. Completely and thoroughly swab raceway before installing wire.

### 3.3 EXISTING WORK

- A. Remove exposed abandoned wire and cable, including abandoned wire and cable above accessible ceiling finishes. Patch surfaces where removed cables pass through building finishes.
- B. Disconnect abandoned circuits and remove circuit wire and cable. Remove abandoned boxes when wire and cable servicing boxes is abandoned and removed. Install blank cover for abandoned boxes not removed.
- C. Provide access to existing wiring connections remaining active and requiring access. Modify installation or install access panel.
- D. Extend existing circuits using materials and methods compatible with existing electrical installations, or as specified.
- E. Clean and repair existing wire and cable remaining or wire and cable to be reinstalled.

### 3.4 INSTALLATION

- A. Route wire and cable to meet Project conditions.
- B. Neatly train and lace wiring inside boxes, equipment, and panelboards.

- C. Identify and color code wire and cable under provisions of Section 26 05 53. Identify each conductor with its circuit number or other designation indicated.
- D. Special Techniques--Building Wire in Raceway:
  - 1. Pull conductors into raceway at same time.
  - 2. Install building wire 4 AWG and larger with pulling equipment.
- E. Special Techniques - Wiring Connections:
  - 1. Clean conductor surfaces before installing lugs and connectors.
  - 2. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
  - 3. Tape uninsulated conductors and connectors with electrical tape to 150 percent of insulation rating of conductor.
  - 4. Install split bolt connectors for copper conductor splices and taps, 6 AWG and larger.
  - 5. Install solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.
  - 6. Install insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.
  - 7. Terminate aluminum conductors with tin-plated, aluminum-bodied compression connectors only. Fill with anti-oxidant compound before installing conductor.
  - 8. Install suitable reducing connectors or mechanical connector adaptors for connecting aluminum conductors to copper conductors.
- F. Install terminal lugs on ends of 600 volt wires unless lugs are furnished on connected device, such as circuit breakers.
- G. Size lugs in accordance with manufacturer's recommendations terminating wire sizes. Install 2-hole type lugs to connect wires 4 AWG and larger to copper bus bars.
- H. For terminal lugs fastened together such as on motors, transformers, and other apparatus, or when space between studs is small enough that lugs can turn and touch each other, insulate for dielectric strength of 2-1/2 times normal potential of circuit.

### 3.5 WIRE COLOR

- A. General:
  - 1. For wire sizes 10 AWG and smaller, install wire colors in accordance with the following:
    - a. Black, red, and blue for circuits at 120/208 volts single or three phase.
  - 2. For wire sizes 8 AWG and larger, identify wire with colored tape at terminals, splices and boxes. Colors are as follows:
    - a. Black, red, and blue for circuits at 120/208 volts single or three phase.
- B. Neutral Conductors: White. When two or more neutrals are located in one conduit, individually identify each with proper circuit number.
- C. Branch Circuit Conductors: Install three or four wire home runs with each phase uniquely color coded.



- D. Feeder Circuit Conductors: Uniquely color code each phase.
- E. Ground Conductors:
  - 1. For 6 AWG and smaller: Green.
  - 2. For 4 AWG and larger: Identify with green tape at both ends and visible points including junction boxes.

### 3.6 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Perform inspections and tests listed in NETA ATS, Section 7.3.1.

END OF SECTION

## SECTION 26 05 26

### GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Rod electrodes.
  - 2. Wire.
  - 3. Mechanical connectors.
  - 4. Exothermic connections.

##### 1.2 REFERENCES

- A. Institute of Electrical and Electronics Engineers:
  - 1. IEEE 142 - Recommended Practice for Grounding of Industrial and Commercial Power Systems.
  - 2. IEEE 1100 - Recommended Practice for Powering and Grounding Electronic Equipment.
- B. International Electrical Testing Association:
  - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- C. National Fire Protection Association:
  - 1. NFPA 70 - National Electrical Code.

##### 1.3 SYSTEM DESCRIPTION

- A. Grounding systems use the following elements as grounding electrodes:
  - 1. Rod electrode.

##### 1.4 PERFORMANCE REQUIREMENTS

- A. Grounding System Resistance: 25 ohms maximum.

##### 1.5 SUBMITTALS

- A. Division 01 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data on grounding electrodes and connections.
- C. Test Reports: Indicate overall resistance to ground and resistance of each electrode.
- D. Manufacturer's Installation Instructions: Submit for active electrodes.

## 1.6 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of components and grounding electrodes.

## 1.7 QUALITY ASSURANCE

- A. Provide grounding materials conforming to requirements of NEC, IEEE 142, and UL labeled.

## 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labeled with manufacturer's identification.
- B. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.
- C. Do not deliver items to project before time of installation. Limit shipment of bulk and multiple-use materials to quantities needed for immediate installation.

## 1.9 COORDINATION

- A. Complete grounding and bonding of building reinforcing steel prior concrete placement.

# PART 2 PRODUCTS

## 2.1 ROD ELECTRODES

- A. Manufacturers:
  - 1. Erico, Inc.
  - 2. O-Z Gedney Co.
  - 3. Thomas & Betts, Electrical
- B. Product Description:
  - 1. Material: Copper.
  - 2. Diameter: 3/4 inch inch.
  - 3. Length: 10 feet.
- C. Connector: Connector for exothermic welded connection. U-bolt clamp.

## 2.2 WIRE

- A. Material: Stranded copper.
- B. Grounding Electrode Conductor: Copper conductor bare.
- C. Bonding Conductor: Copper conductor bare.

## 2.3 MECHANICAL CONNECTORS

- A. Manufacturers:
  - 1. Erico, Inc.
  - 2. ILSCO Corporation
  - 3. O-Z Gedney Co.
  - 4. Thomas & Betts, Electrical
- B. Description: Bronze connectors, suitable for grounding and bonding applications, in configurations required for particular installation.

## 2.4 EXOTHERMIC CONNECTIONS

- A. Manufacturers:
  - 1. Copperweld, Inc.
  - 2. ILSCO Corporation
  - 3. O-Z Gedney Co.
  - 4. Thomas & Betts, Electrical
- B. Product Description: Exothermic materials, accessories, and tools for preparing and making permanent field connections between grounding system components.

# PART 3 EXECUTION

## 3.1 EXAMINATION

- A. Verify final backfill and compaction has been completed before driving rod electrodes.

## 3.2 PREPARATION

- A. Remove paint, rust, mill oils, surface contaminants at connection points.

## 3.3 EXISTING WORK

- A. Modify existing grounding system to maintain continuity to accommodate renovations.
- B. Extend existing grounding system using materials and methods compatible with existing electrical installations, or as specified.

## 3.4 INSTALLATION

- A. Install in accordance with IEEE 142 & 1100
- B. Install rod electrodes at locations as indicated on Drawings. Install additional rod electrodes to achieve specified resistance to ground.
- C. Install grounding and bonding conductors concealed from view.

- D. Install AWG bare copper wire in foundation footing as indicated on Drawings.
- E. Install grounding electrode conductor and connect to reinforcing steel in foundation footing as indicated on Drawings. Electrically bond steel together.
- F. Bond together metal siding not attached to grounded structure; bond to ground.
- G. Install grounding and bonding in patient care areas to meet requirements of NFPA 99.
- H. Equipment Grounding Conductor: Install separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.
- I. Install continuous grounding using underground cold water system and building steel as grounding electrode. Where water piping is not available, install artificial station ground by means of driven rods or buried electrodes.
- J. Permanently ground entire light and power system in accordance with NEC, including service equipment, distribution panels, lighting panelboards, switch and starter enclosures, motor frames, grounding type receptacles, and other exposed non-current carrying metal parts of electrical equipment.
- K. Install branch circuits feeding isolated ground receptacles with separate insulated grounding conductor, connected only at isolated ground receptacle, ground terminals, and at ground bus of serving panel.
- L. Accomplish grounding of electrical system by using insulated grounding conductor installed with feeders and branch circuit conductors in conduits. Size grounding conductors in accordance with NEC. Install from grounding bus of serving panel to ground bus of served panel, grounding screw of receptacles, lighting fixture housing, light switch outlet boxes or metal enclosures of service equipment. Ground conduits by means of grounding bushings on terminations at panelboards with installed number 12 conductor to grounding bus.
- M. Grounding electrical system using continuous metal raceway system enclosing circuit conductors in accordance with NEC.
- N. Permanently attach equipment and grounding conductors prior to energizing equipment.

### 3.5 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Grounding and Bonding: Perform inspections and tests listed in NETA ATS, Section 7.13.
- C. Perform ground resistance testing in accordance with IEEE 142.
- D. Perform leakage current tests in accordance with NFPA 99.

- E. Perform continuity testing in accordance with IEEE 142.
- F. When improper grounding is found on receptacles, check receptacles in entire project and correct. Perform retest.

END OF SECTION

## SECTION 26 05 33

### RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Conduit and tubing, outlet boxes, pull and junction boxes, and handholes.
- B. Related Sections:
  - 1. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
  - 2. Section 26 05 29 - Hangers and Supports for Electrical Systems.
  - 3. Section 26 05 53 - Identification for Electrical Systems.
  - 4. Section 26 27 26 - Wiring Devices.

##### 1.2 REFERENCES

- A. National Electrical Manufacturers Association:
  - 1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
  - 2. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
  - 3. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
  - 4. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
  - 5. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

##### 1.3 SYSTEM DESCRIPTION

- A. Raceway and boxes located as indicated on Drawings, and at other locations required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements. Raceway and boxes are shown in approximate locations unless dimensioned. Provide raceway to complete wiring system.
- B. Underground outside Foundation Wall: Provide rigid steel conduit or nonmetallic conduit. Provide cast metal boxes or nonmetallic handhole.
- C. In or Under Slab on Grade: Provide rigid steel conduit or nonmetallic conduit. Provide cast or nonmetallic metal boxes and rigid steel risers above slab "90° Bends".
- D. Outdoor Locations, Above Grade & Exterior Wall Outdoor Conditions: Provide rigid steel or conduit. Provide cast metal outlet, pull, and junction boxes.
- E. Concealed Dry Locations: Provide electrical metallic tubing. Provide sheet-metal boxes. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes.

- F. Exposed Dry Locations: Provide electrical metallic tubing. Provide sheet-metal boxes. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes.

#### 1.4 DESIGN REQUIREMENTS

- A. Minimum Raceway Size:  $\frac{1}{2}$  if 4 or fewer conductors, 4 conductors or more minimum size  $\frac{3}{4}$ " inch unless otherwise specified.

#### 1.5 SUBMITTALS

- A. Division 01 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit for the following:
  - 1. Flexible metal conduit.
  - 2. Liquidtight flexible metal conduit.
  - 3. Nonmetallic conduit.
  - 4. Flexible nonmetallic conduit.
  - 5. Raceway fittings.
  - 6. Conduit bodies.
  - 7. Pull and junction boxes.
- C. Manufacturer's Installation Instructions: Submit application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

#### 1.6 CLOSEOUT SUBMITTALS

- A. Project Record Documents:
  - 1. Record actual routing of conduits larger than 2 inch.
  - 2. Record actual locations and mounting heights of outlet, pull, and junction boxes.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- B. Protect PVC conduit from sunlight.

#### 1.8 COORDINATION

- A. Coordinate installation of outlet boxes for equipment connected under Section 26 05 03.
- B. Coordinate mounting heights, orientation and locations of outlets mounted above counters, benches, and backsplashes.



## PART 2 PRODUCTS

### 2.1 METAL CONDUIT

- A. Rigid Steel Conduit: ANSI C80.1.
- B. Rigid Aluminum Conduit: ANSI C80.5.
- C. Fittings and Conduit Bodies: NEMA FB 1; material to match conduit.

### 2.2 FLEXIBLE METAL CONDUIT

- A. Product Description: Interlocked steel construction.
- B. Fittings: NEMA FB 1.

### 2.3 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- A. Product Description: Interlocked steel aluminum construction with PVC jacket.
- B. Fittings: NEMA FB 1.

### 2.4 ELECTRICAL METALLIC TUBING (EMT)

- A. Product Description: ANSI C80.3; galvanized tubing.
- B. Fittings and Conduit Bodies: NEMA FB 1; steel or malleable iron, compression set screw indenter type.

### 2.5 NONMETALLIC CONDUIT

- A. Product Description: NEMA TC 2; Schedule 40 PVC.
- B. Fittings and Conduit Bodies: NEMA TC 3.

### 2.6 OUTLET BOXES

- A. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
  - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; furnish 1/2 inch male fixture studs where required.
  - 2. Concrete Ceiling Boxes: Concrete type.
- B. Cast Boxes: NEMA FB 1, Type FD, aluminum. Furnish gasketed cover by box manufacturer. Furnish threaded hubs.

### 2.7 PULL AND JUNCTION BOXES

- A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.

- B. Surface Mounted Cast Metal Box: NEMA 250, Type 4; flat-flanged, surface mounted junction box:
  - 1. Material: Galvanized cast iron or Cast aluminum.
  - 2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.
- C. Fiberglass Handholes: Die-molded, glass-fiber hand holes:
  - 1. Cable Entrance: Pre-cut 6 inch x 6 inch cable entrance at center bottom of each side.
  - 2. Size: As indicated on the drawings.
  - 3. Cover: Glass-fiber, weatherproof cover with nonskid finish

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Verify outlet locations and routing and termination locations of raceway prior to rough-in.

#### 3.2 EXISTING WORK

- A. Remove exposed abandoned raceway, including abandoned raceway above accessible ceiling finishes. Cut raceway flush with walls and floors, and patch surfaces.
- B. Remove concealed abandoned raceway to its source.
- C. Disconnect abandoned outlets and remove devices. Remove abandoned outlets when raceway is abandoned and removed. Install blank cover for abandoned outlets not removed.
- D. Maintain access to existing boxes and other installations remaining active and requiring access. Modify installation or provide access panel.
- E. Extend existing raceway and box installations using materials and methods compatible with existing electrical installations, or as specified.
- F. Clean and repair existing raceway and boxes to remain or to be reinstalled.

#### 3.3 INSTALLATION

- A. Ground and bond raceway and boxes in accordance with Section 26 05 26.
- B. Fasten raceway and box supports to structure and finishes in accordance with Section 26 05 29.
- C. Identify raceway and boxes in accordance with Section 26 05 53.
- D. Arrange raceway and boxes to maintain headroom and present neat appearance.

### 3.4 INSTALLATION - RACEWAY

- A. Raceway routing is shown in approximate locations unless dimensioned. Route to complete wiring system.
- B. Arrange raceway supports to prevent misalignment during wiring installation.
- C. Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- D. Group related raceway; support using conduit rack. Construct rack using steel channel specified in Section 26 05 29; provide space on each for 25 percent additional raceways.
- E. Do not support raceway with wire or perforated pipe straps. Remove wire used for temporary supports
- F. Do not attach raceway to ceiling support wires or other piping systems.
- G. Construct wireway supports from steel channel specified in Section 26 05 29.
- H. Route exposed raceway parallel and perpendicular to walls.
- I. Route raceway installed above accessible ceilings parallel and perpendicular to walls.
- J. Route conduit in and under slab from point-to-point.
- K. Maintain clearance between raceway and piping for maintenance purposes.
- L. Maintain 12 inch clearance between raceway and surfaces with temperatures exceeding 104 degrees F.
- M. Cut conduit square using saw or pipe cutter; de-burr cut ends.
- N. Bring conduit to shoulder of fittings; fasten securely.
- O. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for minimum 20 minutes.
- P. Install conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.
- Q. Install no more than equivalent of three 90 degree bends between boxes. Install conduit bodies to make sharp changes in direction, as around beams. Install hydraulic one-shot bender to fabricate factory elbows for bends in metal conduit larger than 2 inch size.
- R. Avoid moisture traps; install junction box with drain fitting at low points in conduit system.

- S. Install fittings to accommodate expansion and deflection where raceway crosses seismic, control and expansion joints.
- T. Install suitable pull string or cord in each empty raceway except sleeves and nipples.
- U. Install suitable caps to protect installed conduit against entrance of dirt and moisture.
- V. Surface Raceway: Install flat-head screws, clips, and straps to fasten raceway channel to surfaces; mount plumb and level. Install insulating bushings and inserts at connections to outlets and corner fittings.
- W. Close ends and unused openings in wireway.

### 3.5 INSTALLATION - BOXES

- A. Install wall mounted boxes at elevations to accommodate mounting heights as indicated on Drawings. Specified in section for outlet device.
- B. Adjust box location up to 10 feet prior to rough-in to accommodate intended purpose.
- C. Orient boxes to accommodate wiring devices oriented as specified in Section 26 27 26.
- D. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- E. In Accessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.
- F. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- G. Do not install flush mounting box back-to-back in walls; install with minimum 6 inches separation. Install with minimum 24 inches separation in acoustic rated walls.
- H. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- I. Install stamped steel bridges to fasten flush mounting outlet box between studs.
- J. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- K. Install adjustable steel channel fasteners for hung ceiling outlet box.
- L. Do not fasten boxes to ceiling support wires or other piping systems.
- M. Support boxes independently of conduit.
- N. Install gang box where more than one device is mounted together. Do not use sectional box.

- O. Install gang box with plaster ring for single device outlets.
- P. At all exterior wall "Exterior" fixture and device boxes provide cast metal or nonmetallic boxes for exposed and flush with wall locations.

### 3.6 INTERFACE WITH OTHER PRODUCTS

- A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods in accordance with Section 07 84 00.
- B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket. Coordinate location with roofing installation specified.
- C. Locate outlet boxes to allow luminaires positioned as indicated on reflected ceiling plan.
- D. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

### 3.7 ADJUSTING

- A. Adjust flush-mounting outlets to make front flush with finished wall material.
- B. Install knockout closures in unused openings in boxes.

### 3.8 CLEANING

- A. Clean interior of boxes to remove dust, debris, and other material.
- B. Clean exposed surfaces and restore finish.

END OF SECTION

## SECTION 26 24 16

### PANELBOARDS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes distribution and branch circuit panelboards.
- B. Related Sections:
  - 1. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
  - 2. Section 26 05 53 - Identification for Electrical Systems.

##### 1.2 REFERENCES

- A. Institute of Electrical and Electronics Engineers:
  - 1. IEEE C62.41 - Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
- B. National Electrical Manufacturers Association:
  - 1. NEMA AB 1 - Molded Case Circuit Breakers and Molded Case Switches.
  - 2. NEMA FU 1 - Low Voltage Cartridge Fuses.
  - 3. NEMA ICS 2 - Industrial Control and Systems: Controllers, Contactors, and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC.
  - 4. NEMA ICS 5 - Industrial Control and Systems: Control Circuit and Pilot Devices.
  - 5. NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).
  - 6. NEMA PB 1 - Panelboards.
  - 7. NEMA PB 1.1 - General Instructions for Proper Installation, Operation, and Maintenance of Panelboards Rated 600 Volts or Less.
- C. International Electrical Testing Association:
  - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- D. National Fire Protection Association:
  - 1. NFPA 70 - National Electrical Code.
- E. Underwriters Laboratories Inc.:
  - 1. UL 67 - Safety for Panelboards.
  - 2. UL 1283 - Electromagnetic Interference Filters.
  - 3. UL 1449 - Transient Voltage Surge Suppressors.

##### 1.3 SUBMITTALS

- A. Division 01 - Submittal Procedures: Requirements for submittals.

- B. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker and fusible switch arrangement and sizes.
- C. Product Data: Submit catalog data showing specified features of standard products.

#### 1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of panelboards and record actual circuiting arrangements.
- B. Operation and Maintenance Data: Submit spare parts listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

#### 1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

#### 1.6 MAINTENANCE MATERIALS

- A. Furnish two of each panelboard key. Panelboards keyed alike to Owner's current keying system.

### PART 2 PRODUCTS

#### 2.1 BRANCH CIRCUIT PANELBOARDS (400A & Less)

- A. Manufacturers:
  - 1. GE Electrical
  - 2. Siemens
  - 3. Square D
  - 4. Cutler Hammer/Eaton
- B. Product Description: NEMA PB1, circuit breaker type, lighting and appliance branch circuit panelboard.
- C. Panelboard Bus: Copper, current carrying components, ratings as indicated on Drawings. Furnish copper ground bus in each panelboard.
- D. Minimum Integrated Short Circuit Rating: 22,000.
- E. Molded Case Circuit Breakers: NEMA AB 1, bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles, listed as Type SWD for lighting circuits, Type HACR for air conditioning equipment circuits, Class A ground fault interrupter circuit breakers as indicated on Drawings. Do not use tandem circuit breakers.
- F. Enclosure: NEMA PB 1, Type 1.

- G. Cabinet Box: 6 inches deep, 20 inches wide for 208 volt and less panelboards.
- H. Cabinet Front: Cabinet front with concealed trim clamps, concealed hinge, metal directory frame, and flush lock keyed alike. Finish in manufacturer's standard gray enamel.

## PART 3 EXECUTION

### 3.1 EXISTING WORK

- A. Maintain access to existing panelboard and load centers remaining active and requiring access. Modify installation or provide access panel.

### 3.2 INSTALLATION

- A. Install panelboards in accordance with NEMA PB 1.1.
- B. Install panelboards plumb.
- C. Install recessed panelboards flush with wall finishes.
- D. Height: 6 feet to top of panelboard and load center; install panelboards taller than 6 feet with bottom no more than 4 inches above floor.
- E. Install filler plates for unused spaces in panelboards.
- F. Provide typed circuit directory for each branch circuit panelboard and load center. Revise directory to reflect circuiting changes to balance phase loads.
- G. Install engraved plastic nameplates in accordance with Section 26 05 53.
- H. Install spare conduits out of each recessed panelboard to accessible location above ceiling. Minimum spare conduits: 5 empty 1 inch. Identify each as SPARE.
- I. Ground and bond panelboard enclosure according to Section 26 05 26. Connect equipment ground bars of panels in accordance with NFPA 70.
- J. Verify final sizes of all breakers with specific loads served and coordinate with equipment to be used.

### 3.3 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Perform circuit breaker inspections and tests listed in NETA ATS, Section 7.6.
- C. Perform switch inspections and tests listed in NETA ATS, Section 7.5.



D. Perform controller inspections and tests listed in NETA ATS, Section 7.16.1.

### 3.4 ADJUSTING

A. Measure steady state load currents at each panelboard feeder; rearrange circuits in panelboard to balance phase loads to within 20 percent of each other. Maintain proper phasing for multi-wire branch circuits.

END OF SECTION

## SECTION 26 27 26

### WIRING DEVICES

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes wall switches; wall dimmers; occupancy switches; receptacles; multi-outlet assembly; and device plates and decorative box covers.
- B. Related Sections:
  - 1. Section 26 05 33 - Raceway and Boxes for Electrical Systems: Outlet boxes for wiring devices.

##### 1.2 REFERENCES

- A. National Electrical Manufacturers Association:
  - 1. NEMA WD 1 - General Requirements for Wiring Devices.
  - 2. NEMA WD 6 - Wiring Devices-Dimensional Requirements.

##### 1.3 SUBMITTALS

- A. Division 01 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit manufacturer's catalog information showing dimensions, colors, and configurations.
- C. Samples: Submit two samples of each wiring device and wall plate illustrating materials, construction, color, and finish.

#### PART 2 PRODUCTS

##### 2.1 WALL SWITCHES

- A. Heavy duty grade-NEMA WD1, flush tumbler, quiet type, toggle handle, 20 A, 120-277V, back and side wired.
- B. Color: As selected by the Engineer.
- C. Single Pole Switch (Toggle):
  - 1. Leviton Model 1221.
  - 2. Hubbell Model HBL1221.
  - 3. Pass and Seymour Model PS20AC1.
- D. Three-way Switch:
  - 1. Leviton Model 1223-L.

2. Hubbell Model HBL 1223.
3. Pass and Seymour Model PS20AC3.

## 2.2 RECEPTACLES

- A. Duplex Receptacle, Conventional Face, 20A-125V, NEMA 5-20R:
  1. Leviton Model 5362.
  2. Hubbell Model HBL 5362.
  3. Pass and Seymour Model 5362.
  4. Substitutions: Not permitted.
- B. GFCI Receptacle, Duplex, Rectangular Face, 20A-125V, NEMA 5-20R.
  1. End of Life Provision: when a GFCI receptacle is incapable of passing its internal test function (it can no longer provide ground fault protection) it will either:
    - a. Render itself incapable of delivering power  
or
    - b. Indicate by visual or audible means that the device must be replaced.
  2. Duplex GFCI Receptable, Rectangular Face, 20A-125V, NEMA 5-20R.
    - a. Leviton Model 6599.
    - b. Hubbell Model GF5362.
    - c. Pass and Seymour Model 2091.

## 2.3 OCCUPANCY SENSOR AUTOMATIC SWITCHES

- A. Wall Switch Occupancy Sensor Switches
  1. The wall switch will turn lights on, automatically, when someone enters a room. It will turn lights off, automatically, when the room is vacated after a pre-set period of time.
  2. The wall switch is to be dual technology type: ultrasonic and infrared.
  3. The wall switch shall be designed to cover areas up to 2,400 square feet with 180 degree field of view coverage.
  4. The wall switch shall detect the types of minor, at-desk motion.
  5. Time-on after activation shall be user adjustable between 30 seconds and 15 minutes.
  6. The wall switch must be easily installed in any standard single gang junction box.
  7. Acceptable Manufacturers: As indicated on the drawings.
- B. Ceiling Mounted Occupancy Sensors
  1. The sensor will turn lights on, automatically, when someone enters a room. It will turn lights off, automatically, when the room is vacated after a pre-set period of time.
  2. The sensor is to be dual technology type: ultrasonic and infrared.
  3. The sensor shall be designed to cover areas up to 2,000 square feet with 360 degree field of view coverage.
  4. The sensor shall detect the types of minor, at-desk motion.
  5. Time-on after activation shall be user adjustable between 30 seconds and 15 minutes.
  6. Acceptable Manufacturers: As indicated on the drawings.

## 2.4 WALL PLATES

- A. Finished Areas – Decorative Thermoplastic Cover Plate: As selected by the Architect/Engineer.
- B. Unfinished Areas – Stainless Steel Cover Plate.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify outlet boxes are installed at proper height.
- B. Verify wall openings are neatly cut and completely covered by wall plates.
- C. Verify branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

### 3.2 PREPARATION

- A. Clean debris from outlet boxes.

### 3.3 EXISTING WORK

- A. Disconnect and remove abandoned wiring devices.
- B. Modify installation to maintain access to existing wiring devices to remain active.

### 3.4 INSTALLATION

- A. Install devices plumb and level close to the latch side of door where possible.
- B. Install switches with OFF position down.
- C. Connect wiring device grounding terminal to outlet box with bonding jumper and or branch circuit equipment grounding conductor.
- D. Install decorative plates on switch, receptacle, and blank outlets in finished areas.
- E. Connect wiring devices by wrapping solid conductor around screw terminal. Install stranded conductor for branch circuits 10 AWG and smaller. When stranded conductors are used in lieu of solid, use crimp on fork terminals for device terminations. Do not place bare stranded conductors directly under device screws.
- F. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

3.5 FIELD QUALITY CONTROL

- A. Inspect each wiring device for defects.
- B. Operate each wall switch with circuit energized and verify proper operation.

3.6 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.

3.7 CLEANING

- A. Clean exposed surfaces to remove splatters and restore finish.

END OF SECTION

## SECTION 26 51 00

### INTERIOR LIGHTING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes interior luminaires, lamps, ballasts, and accessories.
- B. Related Sections:
  - 1. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
  - 2. Section 26 05 33 - Raceway and Boxes for Electrical Systems.

##### 1.2 SUBMITTALS

- A. Division 01 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Indicate dimensions and components for each luminaire not standard product of manufacturer.
- C. Product Data: Submit dimensions, ratings, and performance data.

##### 1.3 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

##### 1.4 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

#### PART 2 PRODUCTS

##### 2.1 INTERIOR LUMINAIRES

- A. Product Description: Complete interior luminaire assemblies, with features, options, and accessories as scheduled.
- B. Provide lamps as scheduled on the light fixture schedule. Acceptable manufacturers are GE, Sylvania and Philips.
- C. Fixtures shall have the specified color finish.

D. All fixtures shall be furnished complete with all the necessary mounting hardware to accommodate the type of mounting as indicated on the drawings for the specific fixture type.

E. Fluorescent lamps shall have a minimum 86 CRI.

## 2.2 LED LIGHTS

A. LED fixture and driver shall be as follows:

1. Shall operate from 50/60 Hz input source of 120V through 277V with sustained variations of +/- 10% (voltage) with no damage to the driver.
2. Output shall be regulated to +/- 5% across published load range.
3. Shall have a power factor greater than 0.90 for primary application to 50% of full load rating.
4. Input current shall have a total harmonic distortion (THD) of less than 20% to 50% of full load rating.
5. Shall have a Class A sound rating.
6. Shall have a minimum operating temperature of -20C (-4F).
7. Shall tolerate sustained open circuit and short circuit output conditions without fail and auto-resetting without need for external fuses or trip devices.
8. Driver output ripple current shall be less than 15% measured peak-to-average, with ripple frequency > 100 Hz.
9. Driver performance requirements shall be met when operated to 50% of full load rating.
10. Driver shall be rated for damp and dry locations.
11. Driver shall have integral common mode and differential mode surge protection of 2.5 kV.
12. Driver shall have integral thermal foldback to reduce driver power above rated case temperature to protect the driver if temperatures reach unacceptable levels.
13. Driver shall comply with NEMA 410 for in-rush current limits.
14. Driver shall incorporate an integral means of limiting surges to the LEDs.

## 2.3 EXIT SIGNS

A. Exit signs shall have LED lamping with rated life in excess of 20 years. Total exit sign wattage shall not exceed 5 watts per face.

## PART 3 EXECUTION

### 3.1 EXISTING WORK

A. Disconnect and remove abandoned luminaires, lamps, and accessories.

### 3.2 INSTALLATION

A. Install suspended luminaires using pendants supported from swivel hangers. Install pendant length required to suspend luminaire at indicated height.

- B. Support luminaires larger than 2 x 4 foot size independent of ceiling framing.
- C. Locate recessed ceiling luminaires as indicated on reflected ceiling plan.
- D. Install surface mounted luminaires plumb and adjust to align with building lines and with each other. Secure to prevent two locations per fixture.
- E. Exposed Grid Ceilings: Support surface-mounted luminaires on grid ceiling directly from building structure and Fasten surface mounted luminaires to ceiling grid members using bolts, screws, rivets, or suitable clips.
- F. Install recessed luminaires to permit removal from below.
- G. Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating.
- H. At all recessed troffer/grid mount fixtures install clips (4 per fixture), 9ga. tie wire at opposite corners to structure above.
- I. Provide one 9 ga. tie wire at all recessed "can" fixtures to structure above and tie housing to grid.
- J. Install wall-mounted luminaires at height as indicated on Drawings as scheduled.
- K. Install accessories furnished with each luminaire.
- L. Connect luminaires to branch circuit outlets provided under Section 26 05 33 using flexible conduit.
- M. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.
- N. Ground and bond interior luminaires in accordance with Section 26 05 26.

### 3.3 FIELD QUALITY CONTROL

- A. Operate each luminaire after installation and connection. Inspect for proper connection and operation.

### 3.4 ADJUSTING

- A. Aim and adjust luminaires.

### 3.5 CLEANING

- A. Remove dirt and debris from enclosures.
- B. Clean photometric control surfaces as recommended by manufacturer.



- C. Clean finishes and touch up damage.

END OF SECTION

DIVISION 31 - SITE WORK  
**Section 31 23 00 - Excavation & Fill**

**1. GENERAL**

**1.01 SECTION INCLUDES**

- A. Base Bid, General Contractor provide:
  - 1. Removal of topsoil and subsoil.
  - 2. Cutting, grading, filling and contouring the site.
  - 3. Excavation for site structures and utilities.
  - 4. Site filling and backfilling.
  - 5. Consolidation and compaction.
  - 6. Trenching.
  - 7. Construction staking.
  - 8. Coordination with utility companies.

**1.02 RELATED SECTIONS**

- A. Section 32 92 19 - Seeding.

**1.03 REFERENCES**

- A. ANSI/ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb Rammer and 12 inch Drop.
- B. ANSI/ASTM C 136 - Method for Sieve Analysis of Fine and Coarse Aggregates.

**1.04 PROJECT RECORD DOCUMENTS**

- A. Accurately record actual locations of new utilities and existing utilities remaining, by horizontal dimensions, elevations or inverts, and slope gradients.

**2. PRODUCTS**

**2.01 ROUGH GRADING MATERIALS**

- A. Subsoil: Excavated material, graded, free of lumps larger than 6 inches and rocks larger than 3 inches, and debris.
- B. Topsoil: Excavated material, graded, free of roots, rocks larger than 1 inch, subsoil, debris and large weeds.

## SECTION 31 23 00-2

- C. Granular Fill: Type A, Course Aggregate, as specified in this Section.

### 2.02 FINISH GRADING MATERIALS

- A. Topsoil - use existing topsoil when possible.
- B. Topsoil: Friable loam; free of subsoil, roots, grass, excessive amounts of weeds, stone and foreign matter; acidity range pH of 5.5 to 7.5; containing a minimum of 4 percent and a maximum of 25 percent organic matter.

### 2.03 FILL MATERIALS

- A. Type A - Coarse Aggregate, CA 7: Crushed stone; free of shale, clay, friable material, debris; graded within the following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
1 1/2 inch	100
1 inch	95 ± 5
1/2 inch	45 ± 15
No. 4	5 ± 5

- B. Type B - Pea Gravel: Natural stone; washed, free of clay, shale, organic matter; graded to the following:

- 1. Minimum Size: 1/4 inch.
- 2. Maximum Size: 5/8 inch.

- C. Type C - Sand: Natural river or bank sand; washed, free of silt, clay, loam, friable or soluble materials, organic matter; graded within the following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
No. 4	100

- D. Subsoil: Excavated material, graded, free of lumps larger than 6 inches rocks larger than 3 inches, and debris.

## 3. EXECUTION

### 3.01 EXAMINATION

- A. Verify site conditions under provision of Section 01 11 00.
- B. Verify that survey benchmark and intended elevations for the work are as indicated.
- C. Verify fill materials to be re-used are acceptable.

### 3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.

## SECTION 31 23 00-3

- B. Identify known underground, above ground, and aerial utilities. Stake and flag locations.
- C. Notify utility company to remove and relocate utilities.
- D. Protect above and below grade utilities which are to remain.
- E. Protect plant life, lawns, and other features remaining as a portion of final landscaping.
- F. Protect bench marks, paving, and curbs from excavation equipment and vehicular traffic.
- G. Generally, compact subgrade to density requirements for subsequent backfill materials as specified.
- H. Cut out soft areas not capable of compaction. Backfill with subsoil fill and compact to density equal to or greater than requirements for subsequent backfill material.
- I. At areas scheduled to receive concrete slabs or paving, compact subsoil to 100 percent of it's maximum dry density.

### 3.03 SITE CLEARING

- A. Clear areas required for access to site and execution of work.
- B. Remove trees and shrubs indicated. Remove stumps, main root ball, and fill void. Clear undergrowth and deadwood without disturbing subsoil.
- C. Remove debris, rock, and extracted plant life from area.
- D. Conform to applicable codes and ordinances for disposal off-site.

### 3.04 TOPSOIL AND SUBSOIL EXCAVATION

- A. Excavate topsoil and subsoil from areas to be further excavated. Do not excavate wet topsoil or subsoil.
- B. Stockpile in area designated on site. Stockpile topsoil and subsoil to depth not exceeding 8 feet.
- C. When excavation through roots is necessary, perform work by hand and cut roots with sharp axe.

### 3.05 EXCAVATION

- A. Underpin adjacent structures which may be damaged by excavation work, including utilities and pipe chases.
- B. Excavation cut not to interfere with normal 45° bearing splay of foundation.
- C. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- D. Hand trim excavation. Remove loose matter.

## SECTION 31 23 00-4

- E. Notify Architect/Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- F. Correct unauthorized excavation at no extra cost to Owner.
- G. Correct areas over-excavated by error.
- H. Stockpile excavated material in area designated on site and remove excess material not being reused from site.

### 3.06 PLACING TOPSOIL

- A. Place topsoil in areas where indicated on the drawings and where seeding and planting is scheduled.
- B. Use topsoil in relatively dry state. Place during dry weather.
- C. Fine grade topsoil eliminating rough or low areas. Maintain levels, profiles, and contours of subgrade.
- D. Remove stone, roots, grass, weeds, debris, and foreign material while spreading.
- E. Manually spread topsoil around plants and building to prevent damage.
- F. Lightly compact placed topsoil.
- G. Remove surplus subsoil and topsoil from site. Leave stockpile area and site clean and raked, ready to receive landscaping.

### 3.07 FILLING

- A. Fill areas to contours and elevations as indicated on the drawings with unfrozen materials.
- B. Granular Fill: Place and compact materials in continuous layers not exceeding 6 inches compacted depth, compacted as scheduled in this section.
- C. Subsoil and Topsoil Fill: Place and compact material in continuous layers not exceeding 8 inches compacted depth, compacted as scheduled in this section.
- D. Maintain optimum moisture content of fill materials to attain required compaction density.
- E. Remove surplus fill materials from site.

### 3.08 BACKFILLING

- A. Backfill areas to contours and elevations as indicated on the drawings with unfrozen materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.

## SECTION 31 23 00-5

- C. Granular Fill: Systematic backfill operations are to be carried out on a lift-by-lift basis, employing Type C granular fill. Compaction of individual lifts is to be carried out and compacted to tolerances specified in this section.
- D. Soil Fill: Place and compact material in continuous layers not exceeding 8 inches compacted depth.
- E. Employ a placement method that does not disturb or damage utilities in trenches.
- F. Maintain optimum moisture content of backfill materials to attain required compaction density.
- G. Remove surplus backfill materials from site. Leave fill material stockpile areas completely free of excess fill materials.

### 3.09 TRENCHING

- A. Excavate subsoil required for storms sewer, sanitary sewer, water and gas piping to municipal utilities.
- B. Cut trenches sufficiently wide to enable installation of utilities and allow inspection.

### 3.10 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus 1/10 foot.

### 3.11 FIELD QUALITY CONTROL

- A. Provide for visual inspection of bearing surfaces.
- B. Compaction testing will be performed in accordance with ANSI/ASTM D698. The Contractor shall notify the Architect/Engineer 24 hours before any compaction is to begin. The Contractor shall keep a log showing how many passes the compactor has made each day and the location of this compaction. The log shall also show the location of all density and proctor tests. A copy of the log shall be sent weekly to the Architect/Engineer, unless instructed otherwise.
- C. If tests indicate work does not meet specified requirements, remove work, replace and re-test.

### 3.12 PROTECTION

- A. Protect excavations by methods required to prevent cave-in or loose soil from falling into excavation.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.
- C. Protect finished work from damage during construction.
- D. Re-compact fills subjected to vehicular traffic.

### 3.13 SCHEDULE

- A. Interior Slab-On-Grade:

## SECTION 31 23 00-6

1. Type A fill, to subgrade elevation, compacted to 100 percent.
- B. Foundation Excavation for Bearing Surfaces:
  1. Type A fill, to subgrade elevation, compacted to 95 percent.
  2. Cover with topsoil fill to finish elevations.
- C. Fill Under Grass Areas:
  1. Subsoil fill, to 6 inches below finish grade, compacted to 90 percent.
  2. Cover with topsoil fill to finish elevations.
- D. Fill to Correct Over-excavation:
  1. Appropriate Type A, B or C fill, flush to required elevations, compacted to 100 percent.
- E. Fill for Storm, Sanitary Piping, Supply Piping and Conduit trenching:
  1. Under Grass Areas: Type C fill, to subgrade elevation, compacted to 90 percent, cover with soil fill in eight (8) inch lifts, compacted to 90 percent.
  2. Under Paving and Concrete Slabs: Type C fill, to subgrade elevation, compacted to 100 percent.

### 3.14 SCHEDULE FOR LIME STABILIZATION

- A. General Site Fill:
  1. Subsoil fill, to the elevations indicated on the drawings, compacted to 95 percent.
- B. Fill Under Building Slabs and Concrete Paving:
  1. Subsoil fill, lime stabilized, to the elevations indicated on the drawings, compacted to 100 percent.
- C. Fill to Correct Over-excavation:
  1. Subsoil fill, flush to required elevation, compacted to 95 percent for general site areas.
  2. Subsoil fill, lime stabilized, flush to required elevation, compacted to 100 percent under building slabs and concrete paving.
- D. Fill for Storm Sewer System Piping and Structures:
  1. Type C fill, 12 inches thick, compacted to 95 percent, cover with subsoil fill, in 8 inch lifts, compacted to 95 percent for general site areas.
  2. Type C fill, 12 inches thick, compacted to 100 percent, cover with subsoil fill, in 8 inch lifts, lime stabilized, compacted to 100 percent under building slabs and concrete paving.

END

31 23 00-6

DIVISION 31 - EARTH WORK  
**Section 31 31 16 - Termite Control**

**1. GENERAL**

**1.01 SECTION INCLUDES**

- A. Base Bid, General Contractor provide:
  - 1. Soil treatment below slabs-on-grade for subterranean insects.
  - 2. Soil treatment at interior and exterior foundation perimeter for subterranean insects.

**1.02 RELATED SECTIONS**

- A. Section 03 30 00 - Cast-In-Place Concrete.
- B. Section 04 22 00 - Concrete Masonry Units.

**1.03 REFERENCES**

- A. United States Environmental Protection Agency (USEPA): Federal Insecticide, Fungicide and Rodenticide Act.

**1.04 QUALITY ASSURANCE**

- A. Applicator: A Commercial Structural Pest Control Business licensed by the Illinois Department of Public Health in accordance with the Structural Pest Control Act.
  - 1. All work is to be performed under the direct supervision of a Certified Technician.
- B. Materials: Provide certification that toxicants conform to specified requirements of authority (EPA) having jurisdiction.
- C. Material packaging: Manufacturer's original containers with seals and labels intact and identifying contents.

**1.05 SUBMITTALS**

- A. Indicate pesticides to be used, composition by percentage, date and rate of application, areas of application, diary of meter readings and corresponding soil coverage.
- B. Submit manufacturer's instructions.
- C. Submit record documents in accordance with Section 01 77 19.

**1.06 WARRANTY**

- A. Provide five year warranty for materials and application.
- B. Provide Bonded Guaranty: Five (5) year coverage against invasion or propagation of subterranean termites, damage to building or building contents by termites; repairs to building or building contents.



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1. Inspect work annually and report in writing to the Owner.

### 2. PRODUCTS

#### 2.01 ACCEPTABLE MANUFACTURERS

- A. Premise 75 - Bayer Corporation
- B. Termidor SC - BASF Corporation
- C. Substitutions in accordance with Section 01 26 00.

#### 2.02 MATERIALS

- A. Pesticide chemical: Water based emulsion, uniform composition, synthetic dye to permit visual identification of treated soil, of the generic chemical chlorpyrifos, permethrin, fenvalerate or isofenpfos.
- B. Dilute pesticide chemical in accord with manufacturer's current printed instructions.

### 3. EXECUTION

#### 3.01 EXAMINATION

- A. Verify soil surfaces are unfrozen, sufficiently dry to absorb pesticide, and ready to receive treatment.
- B. Beginning of application construes acceptable soil conditions.

#### 3.02 APPLICATION

- A. Apply pesticide to foundation excavation walls, of earth formed, prior to installation of perimeter insulation.
- B. Apply pesticide 12 hours prior to installation of vapor barrier under concrete slab on grade.
- C. Apply pesticide to subgrade at exterior walls 12 hours prior to topsoil placement and finish grading.
- D. Apply extra treatment to structure penetrations, pipe, duct and other penetrations.
- E. Apply to ensure uniform distribution.
- F. Coordinate all applications with other Contractors and scheduled work.

#### 3.03 RETREATMENT

- A. When inspection identifies the presence of termites, retreat soil and retest.

## SECTION 31 31 16-3

- B. Use same pesticide specified for original treatment.

### 3.04 CLEANUP

- A. Upon completion of the work, remove all surplus materials, packaging, containers and rubbish resulting from the work, and legally dispose of off site.
- B. Pesticide container disposal: At the Contractor's option:
  - 1. Without rinsing: Unrinsed or improperly rinsed containers will be considered special wastes. Take to a landfill permitted to accept hazardous or special wastes.
  - 2. Triple rinsing:
    - a. Triple rinse all pesticide containers by emptying container into the spray tank and drain in a vertical position for at least 30 seconds.
    - b. Refill container one-fifth to one forth full with rinse water or other dilutant.
    - c. Rinse thoroughly; pour into spray tank and drain in vertical position for at least 30 seconds.
    - d. Repeat steps b. and c. until container has been rinsed three times.
    - e. Pour rinse water into mixing tank or treat as a waste pesticide and dispose of in accordance with 3.04, B, 1. Do not pour rinse water on the ground.
    - f. Triple rinsed containers may be taken to a licensed landfill that accepts general refuse.
  - 3. The Contractor may propose other disposal methods, subject to the prior written approval of the Architect/Engineer and the governing authorities.

END

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DIVISION 32 - EXTERIOR IMPROVEMENTS  
**Section 32 13 13 - Portland Cement Concrete Paving**

1. GENERAL

1.01 SECTION INCLUDES

- A. Base Bid, General Contractor provide:
  - 1. Concrete paving including, but not limited to: sidewalks; parking areas; curbs; entrance drives and equipment pads.
  - 2. Staking: All staking and grading to construct to the lines, grades and dimensions as shown on the plans shall be the responsibility of the General Contractor.

1.02 RELATED SECTIONS

- A. Section 03 30 00 - Cast-In-Place Concrete
- B. Section 31 23 00 - Excavation and Fill.

1.03 REFERENCES

- A. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete
- B. ASTM C94 - Ready Mix Concrete.
- C. Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, 2007 Edition.
- D. CRSI - Concrete Reinforcing Steel Institute Manual of Practice.

1.04 QUALITY ASSURANCE

- A. General Contractor shall perform construction testing of concrete materials in accordance with Section 01 45 23.
- B. Obtain cementitious materials from same source throughout.

2. PRODUCTS

2.01 FORM MATERIALS

- A. Wood or Steel form material, profiled to suit conditions.

2.02 REINFORCEMENT

- A. Welded steel wire fabric and rebar dowels as indicated on the drawings and in accordance with IDOT Standard Specifications for Road and Bridge Construction, 2007 Edition. Coverage in accordance with Section 03 30 00.

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- B. Welded steel wire fabric: ASTM A 185 plain type, in flat sheets, plain finish, sizes 6x6/W2.9 x W2.9 in 5" or 6" concrete and 6x6/W1.4 x W1.4 in 4" concrete.
- C. Reinforcing steel: ASTM A 617, 60 ksi yield grade, deformed bars, sizes as indicated on the drawings.

### 2.03 CONCRETE MATERIALS

- A. Mix and deliver concrete in accordance with ASTM C 94.
- B. Provide concrete to the following mix design:

<u>Unit</u>	<u>Measurement</u>
Compressive Strength (28 day):	4,000 psi
Air Entrainment	5 percent
Slump - Plus or minus 1 inch	4 inches

- C. Use accelerating admixtures in cold weather only when approved by the Architect/Engineer. Use of admixtures will not relax cold weather placement requirements.
- D. Use set retarding admixtures during hot weather only when approved by Architect/Engineer.

### 2.04 SEALING COMPOUND

- A. Sealer: ASTM C 1350, Type I, Class A, clear curing and sealing compound; designed to seal freshly poured concrete to achieve maximum strength; to provide a dust proof concrete surface; and to provide resistance to abrasion, chemicals, and wheel traffic.
- B. Acceptable Manufacturer - Curing & Sealing Compounds:
  - 1. Sonneborn - Kure-N-Seal.
  - 2. Symons - Cure & Seal 30 Plus.
  - 3. Anti-Hydro International - AH Clear Cure WB.
  - 4. Substitutions accepted in accordance to Section 01 26 00.

### 2.05 CONCRETE CONTROL AND EXPANSION JOINTS

- A. Saw-cut Control Joints shall be as indicated on the drawings. Control joints shall consist of a 3/16" saw cut to 1/3 depth of the concrete thickness. Align sidewalk and curb joints.
- B. Expansion joints shall be as indicated on the drawings and placed between concrete and all dissimilar materials and between successive concrete pours. Expansion joints shall consist of a compressible joint filler, recessed to a depth of 1/2 the measurement of the joint width to receive sealant.
- C. All control and expansion joints shall receive sealant per Section 07 92 00.

## SECTION 32 13 13-3

### 3. EXECUTION

#### 3.01 EXAMINATION

- A. Verify compacted subgrade and granular base is ready for the placement of concrete.
- B. Verify gradients and elevations of base are correct.

#### 3.02 PREPARATION

- A. Moisten base and form materials to minimize absorption of water from fresh concrete.
- B. Coat surfaces of trench drain frames with oil to prevent bond with concrete pavement.
- C. Notify Architect/Engineer minimum 24 hours prior to pouring concrete.

#### 3.03 FORMING

- A. Place and secure forms to correct location, dimension, and profile.
- B. Assemble form work to permit easy stripping and dismantling without damaging concrete.
- C. Place joint filler vertical in position, in straight lines. Secure to form work during concrete placement.

#### 3.04 REINFORCEMENT

- A. Place reinforcement at mid-height of slabs-on-grade.
- B. Interrupt reinforcement at expansion joints.
- C. Place dowels to anchor successive concrete pours to existing concrete and to achieve pavement alignment as detailed. Rebar dowels shall be as indicated on the drawings and shall be minimum of #4 deformed bars, 12" in length, at 24" on center.
- D. If drilled into existing concrete, insert dowel and pack hole full with non-shrink grout while providing the other end with a capped sleeve to allow longitudinal movement.

#### 3.05 JOINTS

- A. Place sawn joints as indicated on plans. Align curb, gutter, and sidewalk joints.
- B. Place joint filler between paving components and building or other appurtenances. Recess top of filler 1/4 inch for sealant placement.

#### 3.06 PLACING CONCRETE

- A. Place concrete in accordance with ACI and IDOT standards.
- B. Ensure reinforcement, inserts, embedded parts, and formed joints are not disturbed during concrete placement.

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- C. Place concrete continuously between predetermined construction joints.

### 3.07 CURING AND PROTECTION

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Apply curing, sealing compound in accordance with the manufacturers printed instructions.

### 3.08 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed in accordance with ACI 301 and under provisions of Section 01 45 23.
- B. Submit proposed mix design of each class of concrete to Architect/Engineer for review prior to commencement of work.

### 3.09 PATCHING

- A. Allow Architect/Engineer to inspect concrete surfaces immediately upon removal of forms.
- B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Architect/Engineer upon discovery.
- C. Patch imperfections as directed.

### 3.10 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by the Architect/Engineer.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect/Engineer for each individual area.

### 3.11 FINISHING

- A. Entrance Drive and Parking Paving: Light broom.
- B. Sidewalk Paving: Light broom, radius to 3/8 inch and trowel joint edges.
- C. Inclined Vehicular Drives: Broomed perpendicular to slope.

DIVISION 32 - EXTERIOR IMPROVEMENTS  
**Section 32 92 19 - Seeding**

**1. GENERAL**

**1.01 SECTION INCLUDES**

A. Base Bid, General Contractor provide:

1. Seeding and straw mulching of all disturbed areas.
2. Fertilizer as required.

**1.02 RELATED WORK**

A. Section 31 23 00 - Excavation and Fill

**1.03 REFERENCES**

A. FS O-F-241 - Fertilizers, Mixed, Commercial.

**1.04 REGULATORY REQUIREMENTS**

A. Comply with regulatory agencies for fertilizer and herbicide composition.

**1.05 QUALITY ASSURANCE**

A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

**1.06 TESTS**

A. Test soil to determine composition and fertilizer requirements. Use information in determining fertilizer and seed mixtures.

**1.07 MAINTENANCE DATA**

A. Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer.

**1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver store and protect products under provisions of Section 01 66 00. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.
- B. Deliver fertilizer in water proof bags showing weight, chemical analysis, and name of manufacturer.

**1.09 MAINTENANCE SERVICE**

A. Maintain seeded areas immediately after placement until grass is well established and exhibits a vigorous growing condition. Re-seed if necessary.

## SECTION 32 92 19-2

### 2. PRODUCTS

#### 2.01 SEED MIXTURE

- A. Kentucky Blue Grass: 25 percent.
- B. Creeping Red Fescue Grass: 25 percent.
- C. Norlea Perennial Rye: 50 percent.

#### 2.02 SOIL MATERIALS

- A. Topsoil: Excavated from site or imported, free of debris, rocks and weeds.

#### 2.03 ACCESSORIES

- A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped corn stalks are not acceptable.
- B. Fertilizer, as required: FS O-F-241, Type I Grade A; recommended for grass, with 50 percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil to the following proportions: Nitrogen 10 percent, phosphoric acid 6 percent, soluble potash 5 percent.
- C. Water: Clean, fresh and free of substances or matter which could inhibit vigorous growth of grass.
- D. Rolling, liming, watering or other methods may be used at the discretion of the Contractor to ensure a good stand of erosion resistant ground cover on all areas specified herein.

### 3. EXECUTION

#### 3.01 INSPECTION

- A. Verify that prepared soil base is ready to receive the work of this Section. Beginning of installation means acceptance of existing site conditions.

#### 3.02 PREPARATION OF SUBSOIL

- A. Prepare subsoil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.
- B. Remove foreign materials, weeds, and undesirable plants and their roots. Remove contaminated subsoil.
- C. Scarify subsoil to a depth of 3 inches where topsoil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil.
- D. Fertilizer shall be evenly applied at a rate of 25 lbs. per 1,000 square feet.



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- E. Seed shall be applied when fertilizer is applied or at a later time at a rate of six (6) lbs. per 1,000 square feet.

END

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